BLAUPUNKT
BOSCH Gruppe

Chassis FM 100-42

PS 55-28	7 667 260
IS 55-28	7 667 200
IS 63-28	7 667 400
IS 63-28 VT	7 667 500
IS 70-28	7 667 800
IS 70-28 VT	7 667 810

Farbfernseher
Colour TV
Televisore a colori

Kundendienstschrift · Service Manual
Istruzioni di assistenza

D **Btx * 30 39 68 #**

VKD 6 D87 464 055

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Änderungen vorbehalten
Modifications reserved
Con riserva di modifiche

Service-Einstellungen

Die Service-Einstellungen nur am betriebswarmen Gerät vornehmen.

Einstellung Spannung + C
Sender empfangen. Kontrast und Helligkeit auf Minimum einstellen. Voltmeter an Kathode D 514 und Masse. Mit R 637 (Chassis-Platte) einstellen.
IS 55-28 · IS63-28 = 196 V
PS 55-28 · IS 70-28 = 192 V

Bildhöhe
Mit R 2784 (Ablenk-Modul) einstellen.

Bildbreite
Mit R 554 (Chassis-Platte) einstellen.

Ost-West-Entzerrung
Mit R 561 (Chassis-Platte) einstellen.

Bild-Linearität
Mit R 2766 (Ablenk-Modul) einstellen.

Bildlage (horizontal)
Mit R 512 (Chassis-Platte) einstellen.

Horizontal-Frequenz
IC 2705/12 an Masse. Mit R 2731 (Ablenk-Modul) auf Schwebung einstellen. Kurzschluß aufheben.

Vertikal-Frequenz
R 2767 (Ablenk-Modul) so einstellen, daß das Bild langsam von unten nach oben läuft und dann einrastet.

Schärfe (Fokus)
Mit R 501 (Chassis-Platte) einstellen.

Service Adjustments

The service adjustments may be carried out at a set warmed up to normal operating temperature only.

Adjustment voltage + C
Receive transmitter. Set contrast and brightness to minimum. VTVM to cathode D 514 and ground. With R 637 (Chassis Board) adjust.
IS 55-28 · IS 63-28 = 196 V
PS 55-28 · IS 70-28 = 192 V

Picture height
With R 2784 (Deflection Module) adjust.

Picture width
With R 554 (Chassis Board) adjust.

East-West Pin cushion correction
With R 561 (Chassis Board) adjust.

Picture linearity
With R 2766 (Deflection Module) adjust.

Centering (horizontal)
With R 512 (Chassis Board) adjust.

Horizontal frequenzy
IC 2705 connect pin 12 to ground. With R 2731 (Deflection Module) adjust to beat. Finish the short circuit.

Vertical frequency
Adjust R 2767 (Deflection Module) so that the picture is slowly drifting from the bottom to the top and will then be arrested.

Definition (Focus)
With R 501 (Chassis Board) adjust.

Regolazioni di servizio

Le regolazioni di servizio possono iniziarsi solo ad apparecchio caldo.

Regolazione della tensione + C
Ricevere una emittente. Contrasto e luminosita regolati per il minimo. Voltmetro elettronico fra massa e D 514. Regolare la tensione con R 637 (Piastra Chassis).
IS 55-28 · IS 63-28 = 196 V
PS 55-28 · IS 70-28 = 192 V

Ampiezza
Regolare con R 2784 (Modulo Deflessione).

Larghezza del riquadro
Regolare con R 554 (Piastra chassis).

Correzione est-ovest
Regolare con R 561 (Piastra chassis).

Lin. del quadro
Regolare con R 2766 (Modulo Deflessione).

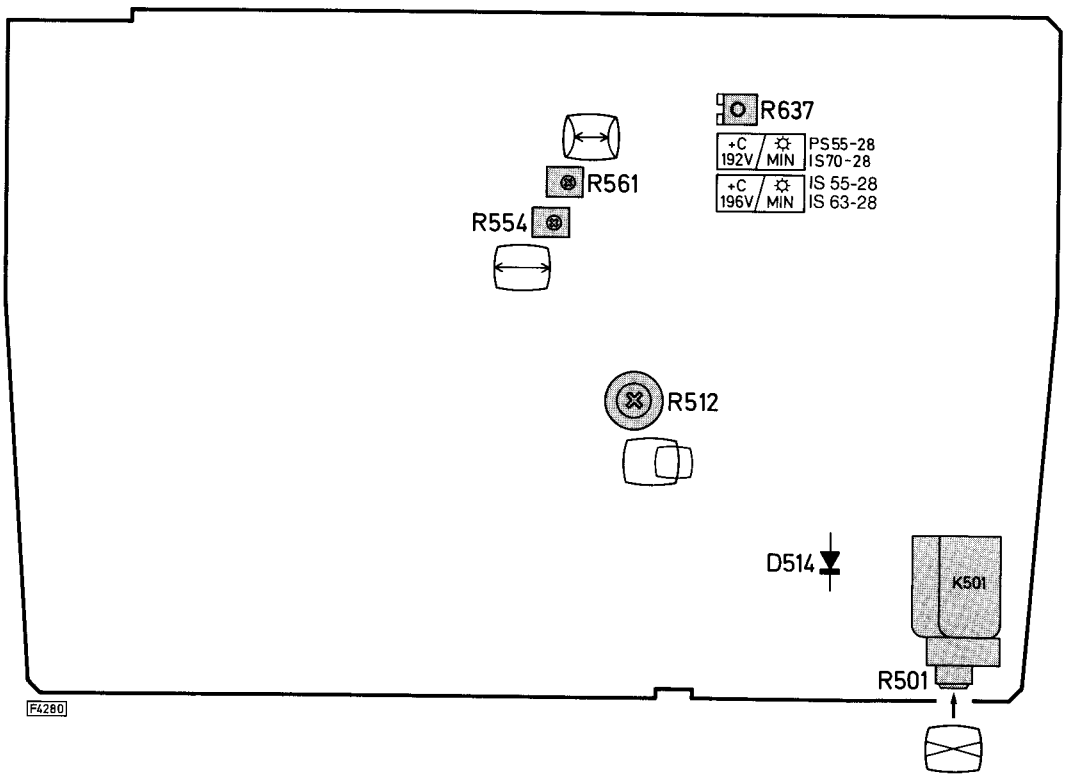
Centratura (orizzontale)
Regolare con R 512 (Piastra Chassis).

Frequenza orrizontale
Collegare a massa il punto IC 2705/12 con R 2731 (Modulo Deflessione). Completare il corto circuito.

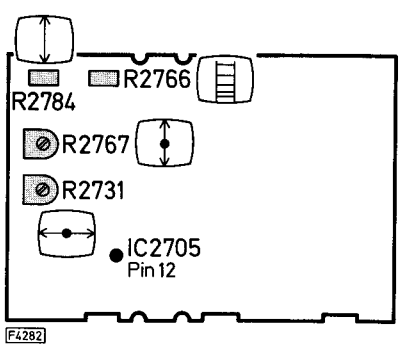
Frequenza verticale
effettuare la regolazione della R 2767 (modulo di deflessione) in modo che l'immagine giri lentamente dall'alto verso il basso fino all'arresto.

Nitidezza (Fuoco)
Regolare con R 501 (Piastra chassis).

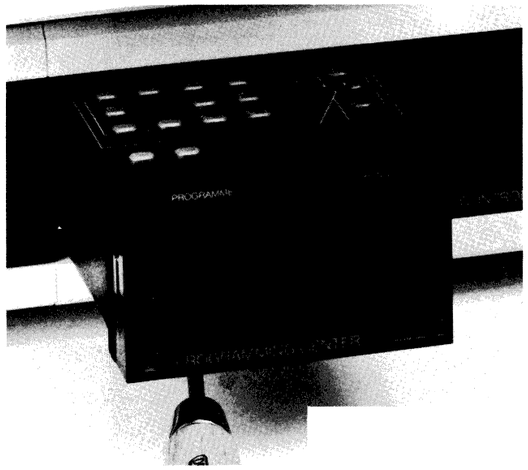
Chassis-Platte
Chassis Board
Piastra chassis

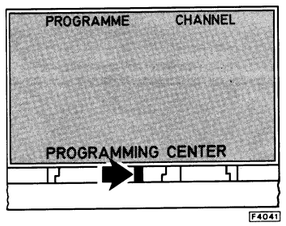


Ablenk-Modul
Deflection Module
Modulo Deflessione



Ausbau-Bedienteil **IS 55-28 · IS 63-28 · IS 70-28**
Removal of Control Unit
Smontaggio sezione di comando

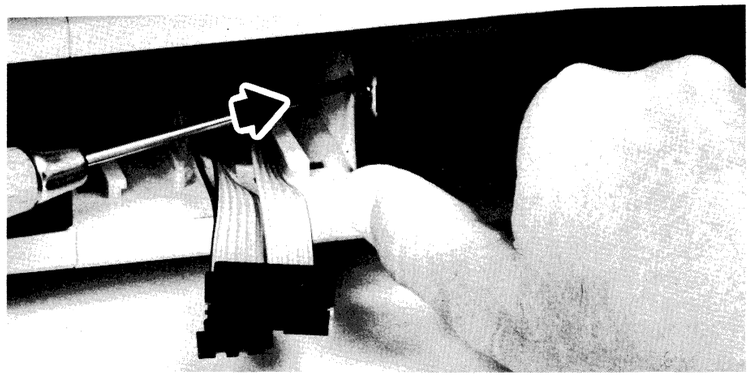


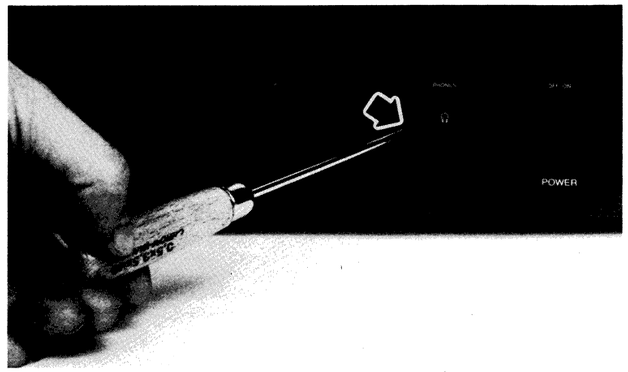


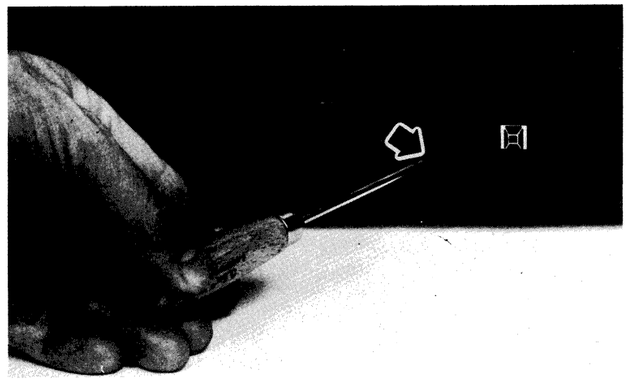
Programm-Schublade bis zum Anschlag herausziehen und etwa 10 mm wieder einschieben. Mit Hilfe eines längeren dünnen Schraubendrehers o. ä., Rasthaken nach rechts zur Seite schieben und Schublade herausziehen.

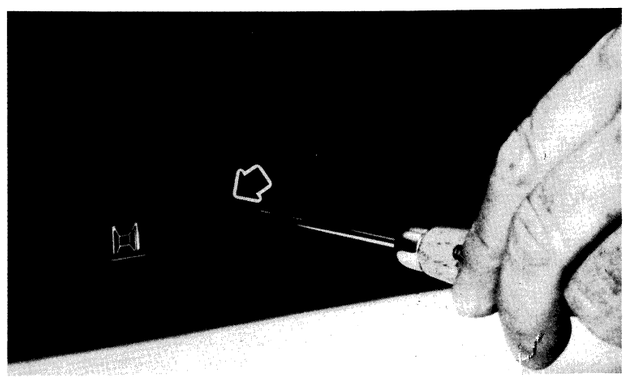
Pull the program drawer out as far as possible, then push it back inwards about 10 mm. Use a rather long, thin screwdriver (or a similar tool) to push the stop hook to the right, and pull the drawer out.

Sfilare cassettino comandi fino all'arresto, inserirlo nuovamente per ca. 10 mm. Con l'aiuto di un giravite lungo e suttile, o qualcosa di simile, spostare il gancino verso destra ed estrarre il cassettino.

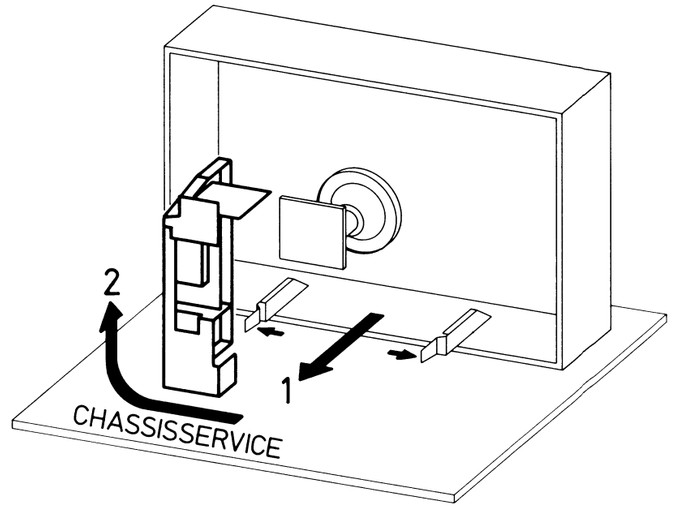






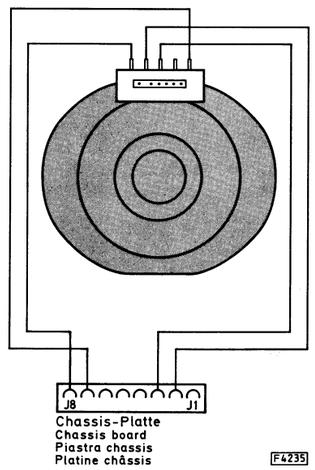


Serviceeinstellung
Service position
Posizione di servizio

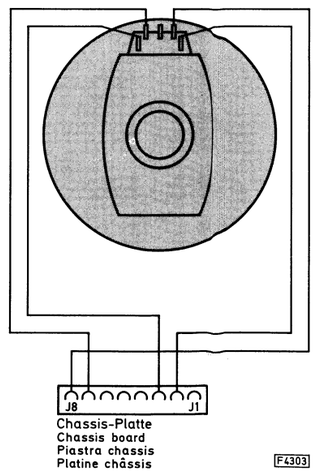


Verdrahtung der Ablenkspulen
Wiring of Deflection Yoke
Impianto elèttrico bobine di deviazione

Bildöhre
Picture Tube
Cinescopio
A 51 EAK 01x05
A 59 EAK 01x01
A 66 EAK 01x01



Bildröhre
Picture Tube
Cinescopio
A 51 JAR 43x01
A 51 JSX 61x03



Symbole und ihre Bedeutung
Symbols and their meaning
Simboli e loro significati

P — PROGR.

ZWEI-KANAL-TON
TWO-CHANNEL SOUND
PER AUDIO BICANALE
SON DEUX CANAUX

ME — SPEICHERTASTE
MEMORY BUTTON
TASTO DI MEMORIA
TOUCHE MEMOIRE

S — NORMTASTE
TV STANDARD SELECT. BUTTON
COMMUT. DI NORMA
TOUCHE DE NORME

\+ — ÄNDERUNG +
ALTERATION +
MODIFICA +
MODIFI +

\− — ÄNDERUNG −
ALTERATION −
MODIFICA −
MODIFI −

HELLIGKEIT
BRIGHTNESS
LUMINOSITA'
LUMINOSITE

KONTRAST
CONTRAST
CONTRASTO
CONTRASTE

FARBKONTRAST
CONTRAST COLOUR
CONTRASTO COLORE
CONTRASTE COULEUR

LAUTSTAERKE
VOLUME
VOLUME SONORE

FEINABST.
FINE TUNING
SINT. FINE
REGLAGE FIN

C — KANALWAHL
CHANNEL SEL.
SELEZ. CANALE
SELECT. DE CANAUX

BALANCE
BILANCIAM.
BALANCE

SUCHLAUF
SELF-SEEK
SINT. AUTOM.
RECHERCHE AUTOM.

VERT. TASTIMPULS
VERT. GATING PULSE
IMP. A CADENZA VERT.
IMP. TRAME

VERT. PARABEL
VERT. PARABOLA
PARABOLA VERT.
SIGNAL PARABOLIQUE

VERT. SAEGEZAHN
VERT. SAW TOOTH
DENTE DI SEGA VERT.
SIGNAL DENT DE SCIE

HOR. ANSTEUERUNG
HORIZ. DRIVE
PILOTAGGIO ORIZZ.
SYNCHR. LIGNES

REF. IMPULS
REFERENCE PULSE
IMP. DI RIFER.
IMP. DE REFER.

SCHUTZSCHALTUNG
CIRCUIT PROTECTION
CIRCUITO DI PROTEZIONE
CIRCUIT DE SECURITE

FARBTON
TINT
TINTA
TEINTE

REF. LAUTSTAERKE
VOLUME REF. VOLT.
TENS. DI RIF. VOLUME
TENS. DE REF. VOL. SONORE

FBAS — FBAS-SIGNAL
CCVS SIGNAL
SEGNALE SVCC
SIGNAL VIDEO COMPOSITE

SSC — SUPERSANDCASTLE

SB — STRAHLSTR. BEGR.
BEAM CURRENT LIM.
CORRENTE CATODICA MEDIA
LIM. COUR. DE FAISCEAU

SSB — SPITZ. STRAHLSTR. BEGR.
PEAK BEAM CURRENT LIMITING
CORR. CATODICA DI PICCO
LIM. DE FAISCEAU CRETE

R — ROT-SIGNAL
RED SIGNAL
SEGNALE ROSSO
SIGNAL ROUGE

G — GRUEN-SIGNAL
GREEN SIGNAL
SEGNALE VERDE
SIGNAL VERT

U_H — HOCHSPANNUNG
EHT VOLTAGE
ALTA TENS.
HAUTE TENS.

U_{SG} — SCHIRMGITTERSP.
SCREEN-GRID VOLT.
TENS. GRIGLIA SCHERMO
TENS. GRILLE-ECRAN

TE — TEXT ENABLE

SCL — I^2C-CLOCK

VCL — VCR-CLOCK

ICL — I-BUS-CLOCK

SDA — DATEN
DATA
DATI
DONNEES

ZF — ZF-SIGNAL
IF SIGNAL
SEGNALE FI
SIGNAL FI

PP — PAL PRIORITAET
PAL PRIORITY
PRIORITA' PAL
PRIORITE PAL

F-DIR. — F-SIGNAL DIREKT
F SIGNAL DIRECT
SEGNALE F DIRETTO
SIGNAL CHROMA DIRECT

F_V — FV-SIGNAL
FV SIGNAL
SEGNALE FV
SIGNAL FY

F_U — FU-SIGNAL
FU SIGNAL
SEGNALE FU
SIGNAL FX

F-VERZ — F-SIGNAL VERZOEGERT
F SIGNAL DELAYED
SEGNALE F RITARD.
SIGNAL CHROMA RETARDE

DL — VERZOEGERUNGSLEITUNG
DELAY LINE
LINEA DI RITARDO
LIGNE A RETERD

ZEILENBREITE
LINE WIDTH
LARGHEZZA DI RIGA
AMPLITUDE HORIZONTALE

OST / WEST AMPLITUDE
EAST / WEST AMPLITUDE
AMPIEZZA EST / OVEST
AMPLITUDE EST / OUEST

HOR. LINEARITAET
HORIZ. LINEARITY
LINEAR. ORIZZ.
LINEAR. HORIZONT.

BILDLAGE HOR.
HORIZ. PICTURE POSITION
POSIZIONE ORIZZ. D'IMMAGINE
CADRAGE HORIZONT.

FOKUSREGLER
FOCUS CONTROL
REGOLAT. DI FOCALIZZ.
REGLAGE DE FOCALISATION

BILDLAGE VERT.
VERT. PICTURE POSITION
POSIZ. VERT. D'IMMAGINE
CADRAGE VERTICAL

BILDAMPLITUDE
FIELD AMPLITUDE
AMPIEZZA D'IMMAGINE
AMPLITUDE VERTICALE

TRAPEZ
TRAPEZIUM
TRAPEZIO
TRAPEZE

HOR. FREQUENZ
HOR. FREQUENCY
FREQ. ORIZZ.
FREQ. HORIZ.

VERT. FREQUENZ
VERT. FREQUENCY
FREQ. VERT.

VERT. LINEARITAET
VERT. LINEARITY
LINEAR. VERT.
LINEAR. VERT.

OST/WEST SYMMETRIE
EAST/WEST SYMMETRY
SIMMETRIA EST/OVEST
SYMMETRIE EST/OUEST

$U_{ST/M}$ — SCHALTSP. BANDWAHL
BAND SEL. SWITCHING VOLTAGE
TENS. DI COMMUT. SELEZ. BANDA
TENS. DE COMMUT. SELECT. BANDE

U_{VHF} — SCHALTSP. VHF
SWITCHING VOLT. VHF
TENS. DI COMMUT. VHF
TENS. DE COMMUT. VHF

U_{UHF} — SCHALTSP. UHF
SWITCHING VOLT. UHF
TENS. DI COMMUT. UHF
TENS. DE COMMUT. UHF

U_{AFC} — SCHALTSP. AFC
SWITCHING VOLT. AFC
TENS. DI COMMUT. AFC
TENS. DE COMMUT. AFC

U_{AV} — SCHALTSP. AV
AV SWITCHING VOLT.
TENS. DI COMMUT. AV
TENS. DE COMMUT. AV

U_{NORM} — SCHALTSP. NORM
SWITCHING VOLT. STANDARD
TENS. DI COMMUT. NORMA
TENS. DE COMMUT. STANDARD

U_{KOINZ} — SCHALTSP. KOINZ.
SWITCHING VOLT. COINC.
TENS. DI COMMUT. COINC.
TENS. DE COMMUT. COINC.

$U_{EURO-AV}$ — SCHALTSP. EURO-AV
SWITCHING VOLT. EURO-AV
TENS. DI COMMUT. EURO-AV
TENS. DE COMMUT. NORME FR

U_{VQ} — SCHALTSP. VIDEO QUELLE
SWITCHING VOLT. VIDEO SOURCE
TENS. DI COMMUT. SORG. VIDEO
TENS. DE COMMUT. SOURCE VIDEO

U_{DATA} — SCHALTSP. DATENBETR.
SWITCHING VOLT. DATA MODE
TENS. DI COMMUT. DATI
TENS. DE COMMUT. FONCT. DONNEES

$U_{4,5MHZ}$ — SCHALTSP. 4,5 MHZ
SWITCHING VOLT. 4,5 MHZ
TENS. DI COMMUT. 4,5 MHZ
TENS. DE COMMUT. 4,5 MHZ

U_{T} — REGELSP. VERZOEGERT
DELAYED CONTR. VOLTAGE
TENS. DI CONTR. RITARD.
TENS. DE REGUL. RETARDEE

U_{TUN} — ABSTIMMSP. TUNER
TUNING VOLT. TUNER
TENS. DI SINTONIA TUNER
TENS. D'ACCORD TUNER

U_{AFC} — REGELSP. AFC
AFC CONTROL VOLT.
TENS. DI CONTR. AFC
TENS. DE REGUL. AFC

U_{MUTE} — STUMMSCHALTUNG
MUTING
SILENZIAMENTO
SILENCIEUX

TASTIMPULS
GATING PULSE
IMPULSO A CADENZA
IMPULS. DE DECLENCHEMENT

B — BLAU-SIGNAL
BLUE SIGNAL
SEGNALE BLU
SIGNAL BLEU

Y — Y-SIGNAL
SEGNALE Y
SIGNAL Y

F — F-SIGNAL
CHROMA SIGNAL
SEGNALE F
SIGNAL CHROMA

SW — SCHWARZWERT
BLACK LEVEL
LIVELLO DEL NERO
NIVEAU DU NOIR

AUDIO — AUDIO-SIGNAL
SEGNALE AUDIO
SIGNAL AUDIO

AUDIO-L — AUDIO SIGNAL LINKS
AUDIO SIGNAL LEFT
SEGNALE AUDIO SINISTRA
SIGNAL AUDIO GAUCHE

AUDIO-R — AUDIO SIGNAL RECHTS
AUDIO SIGNAL RIGHT
SEGNALE AUDIO DESTRA
SIGNAL AUDIO DROIT

EURO-AV VIDEO — VIDEO SIGNAL EURO-AV
SEGNALE VIDEO EURO-AV
SIGNAL VIDEO NORME FR

EURO-AV AUDIO-R — AUDIO SIGNAL EURO-AV RECHTS
AUDIO SIGNAL EURO-AV RIGHT
SEGNALE AUDIO EURO-AV DESTRA
SIGNAL AUDIO NORME FR DROIT

EURO-AV AUDIO-L — AUDIO SIGNAL EURO-AV LINKS
AUDIO SIGNAL EURO-AV LEFT
SEGNALE VIDEO EURO-AV SINISTRA
SIGNAL AUDIO NORME FR GAUCHE

IR — IR-SIGNAL
SEGNALE IR
SIGNAL IR

U_{G1} — SPG. GITTER 1
VOLTAGE GRID 1
TENS. GRIGLIA 1
TENS. GRILLE G1

U_{FOC} — FOKUSSP.
FOCUSSING VOLTAGE
TENS. DI FOCALIZZ.
TENS. DE FOCALIS.

U_{SHUTT} — SCHALTSP./SCHUTZFUNKTION
SWITCHING VOLT. /PROTECTIVE FUNCTION
TENS. DI COMMUT. /FUNZ.DI PROTEZ.
TENS. DE COMMUT. / SECURITE

EBAS SYNC. — FBAS/SYNC.-SIGNAL
CCVS/SYNC. SIGNAL
SEGNALE SINCR. /VIDEO COL. COMPOSITO
SIGNAL SYNC./VIDEO COMPOSITE

SYNC. — SYNC.-SIGNAL
SYNC. SIGNAL
SEGNALE SINCR.
SIGNAL SYNC.

$U_{50/60HZ}$ — SCHALTSP. 50/60HZ
SWITCHING VOLT.50/60HZ
TENS. DI COMMUT. 50/60HZ
TENS. DE COMMUT. 50/60HZ

U_{BTX} — SCHALTSP. BTX
SWITCHING VOLT. BTX (VIEWDATA)
TENS. COMMUT. VIDEOTEL
TENS. COMMUT. VIDEOTEXTE

SYNC. VT — SYNC. VT
SYNC. VT (TELETEXT)
SINCR. TELEVIDEO
SYNC. TELETEXTE

SYNC. BTX — SYNC. BTX
SYNC. BTX (VIEWDATA)
SINCR. VIDEOTEL
SYNC. VIDEOTEXTE

U_{RESET} — SCHALTSP. RESET
SWITCHING VOLT. RESET
TENS. COMMUT. RESET

$U_{STAND\ BY}$ — SCHALTSP. STAND BY
SWITCHING VOLT. STAND BY
TENS. COMMUT. STAND BY
TENS. COMMUT. VEILLE

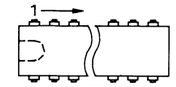
U_{HUB} — SCHALTSP. HUB
SWITCHING VOLT. DEVIATION
TENS. COMMUT. DEVIAZIONE
TENS. COMMUT. DEVIATION

U_{DEEM} — SCHALTSP. DEEM
SWITCHING VOLT. DEEMPHASIS
TENS. COMMUT. DEENFASI
TENS. COMMUT. DESACCENT.

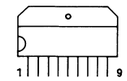
$U_{CAM\ PB\ AV}$ — SCHALTSP. KAMERA WIEDERG.
SWITCHING VOLT. CAMERA PLAYBACK
TENS. COMMUT. RIPRODUZ. TELECAMERA
TENS. COMMUT. REPROD. CAMERA

U_{LED} — SCHALTSP. LED
LED SWITCHING VOLT.
LED TENS. DI COMMUT.
TENS. DE COMMUT. LED

Wichtige Schaltzeichen
Important circuit symbols
Segni circuitali importanti



IC'S VON UNTEN GESEHEN
IC'S SEEN FROM BOTTOM
IC'S VISTI DI SOTTO
IC'S VUS DU DESSOUS



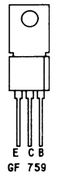
TDA 4601

BF 199

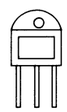
78 L05 CP

BF 421 / BF 422
BC 637 / BF 423

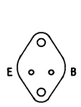
BC 548 / BC 558
BC 337/25
PH 2222
BC 338 / BC 324
BF 414
BC 308 / BC 248
BC 547



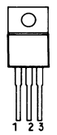
GF 759



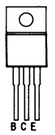
BU 508A / BU 903
BU 508D / BU 908



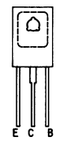
BU 208A
BU 546



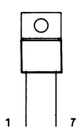
TY 40164 / MC 7505
MC78 M05 CT
7812



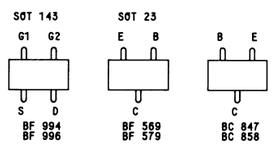
BD 561G
BU 908
BU 903
S 868T
BUT 11A
BUT 56A



BD 561 G
BD 139



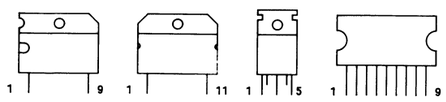
TDA 8170



BF 994
BF 996

BF 569
BF 579

BC 847
BC 858

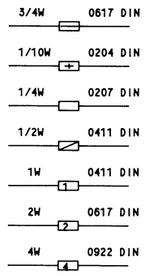


TDA 4935

DL 60292

TDA 2040

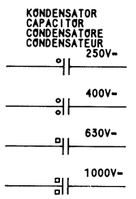
TDA 3654
TDA 3653A

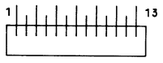


WIDERSTAND NICHT BRENNBAR
RESISTOR NOT FLAMMABLE
RESISTENZA NON INFIAMMABILE
RESISTANCE ININFLAMMABLE

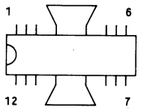
DRAHTWIDERSTAND
WIRE RESISTOR
RESISTENZA A FILO
RESISTANCE BOBINEE

SICHERUNGSWIDERSTAND
SAFETY RESISTOR
RESISTENZA DI SICUREZZA
RESISTANCE DISJONCTABLE





TDA 2653A

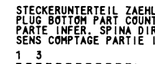


TDA 2655B

⚠ BEI ERSATZ AUS SICHERHEITSGRUENDEN NUR ORIGINALBAUTEILE VERWENDEN.
FOR REASONS OF SAFETY USE ORIGINAL PARTS ONLY WHEN REPLACING.
IN CASO DI SOSTITUZIONE UTILIZZARE PER RAGIONI DI SICUREZZA SOLAMENTE PEZZI DI RICAMBIO ORIGINALI.
EN CAS DE REMPLACEMENT N'UTILISER, POUR DES RAISONS DE SECURITE, QUE DES PIECES D'ORIGINE.

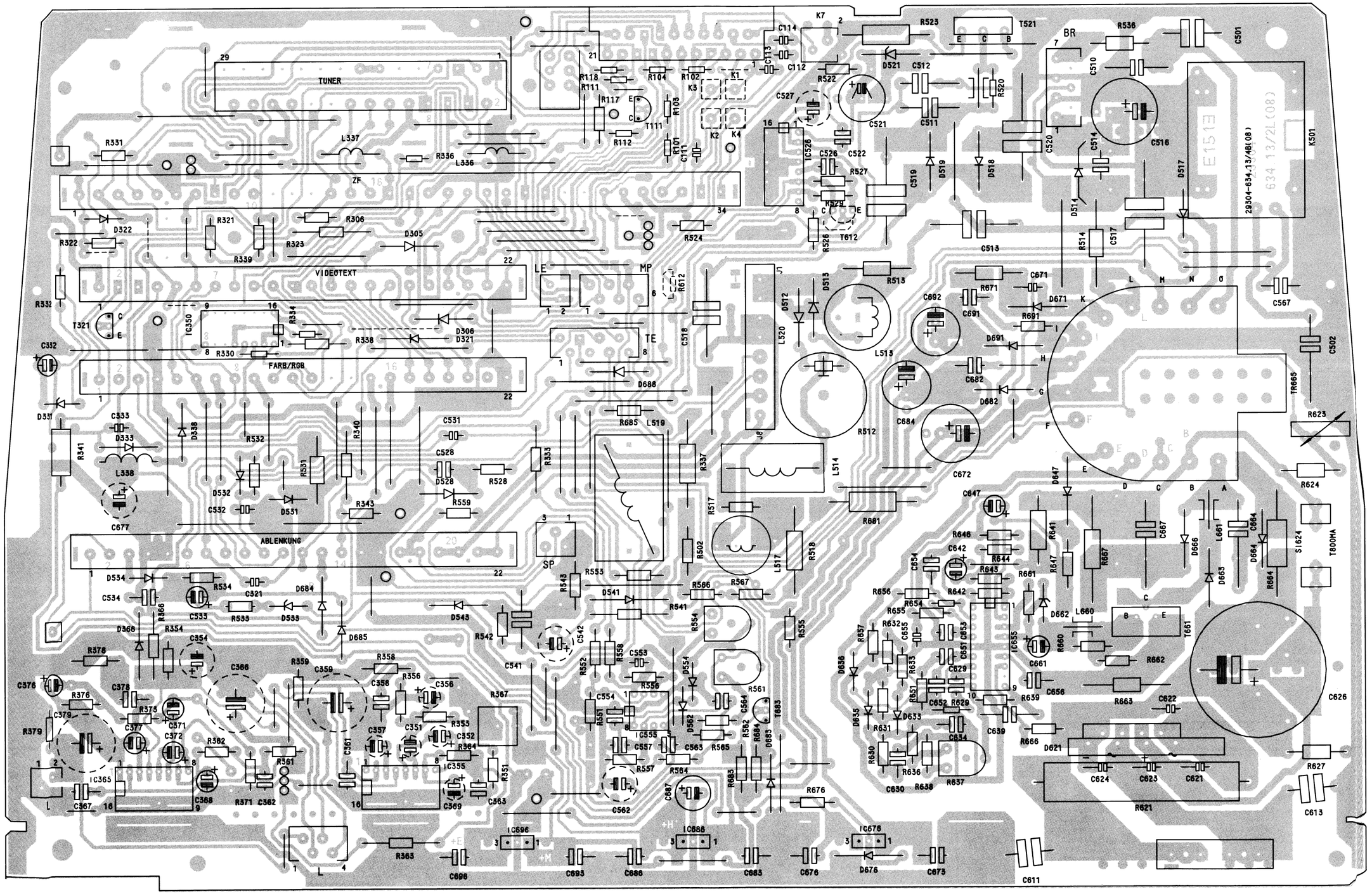
BEI EINGRIFFEN SCHUTZMASSNAHMEN FUER MOS-BAUTEILE BEACHTEN!
WHEN HANDLING MOS-CIRCUITS, ALWAYS OBSERVE THE MOS PROTECTION MEASURES!
ADOPERANDO COMPONENTI O CIRCUITI MOS OSSERVARNE LE CORRISPONDENTI MISURE DI PROTEZIONE!
LORS DE LA MANIPULATION DES CIRCUITS MOS, RESPECTER LES PRESCRIPTIONS MOS!

STECKERUNTERTEIL ZAEHLRICHTUNG
PLUG BOTTOM PART COUNTING DIRECTION
PARTE INFER. SPINA DIREZ. CONTEGGIO
SENS COMPTAGE PARTIE INFER. CONNECTEUR

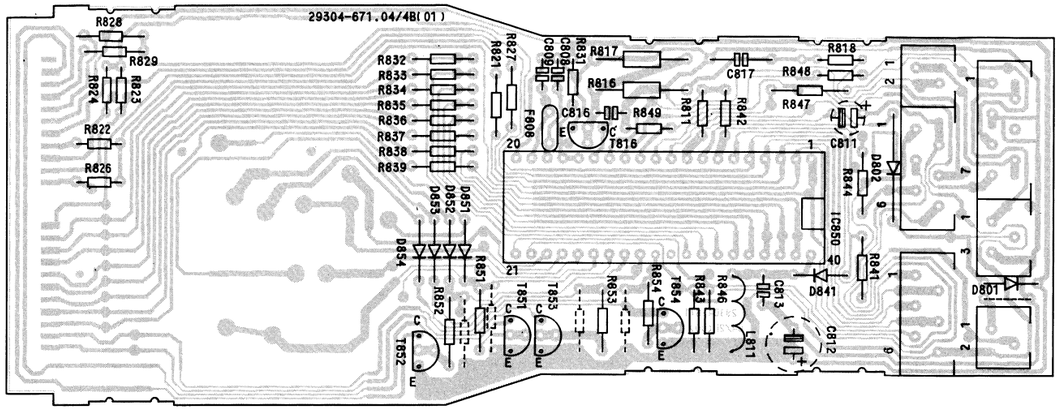


LOETSEITE
SOLDER SIDE
LATO SALDATURE
COTE SOUDURE

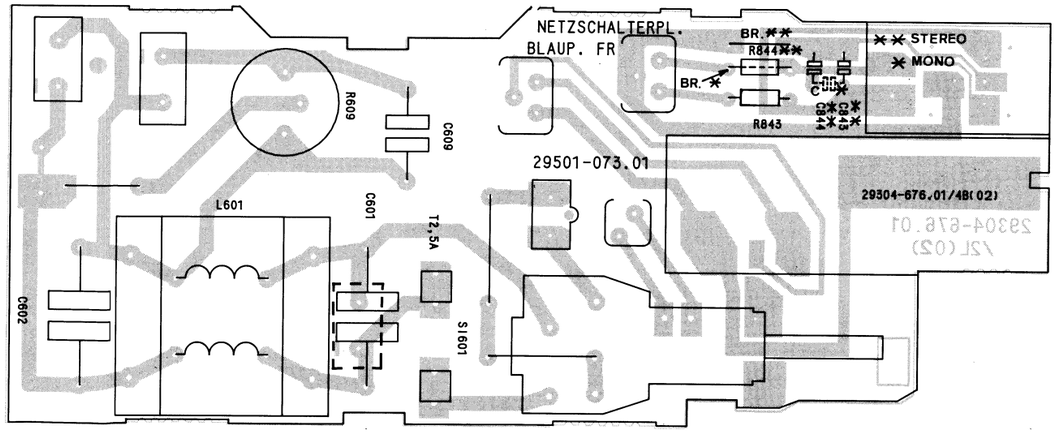
Chassis-Platte
Chassis Board
Piastra chassis



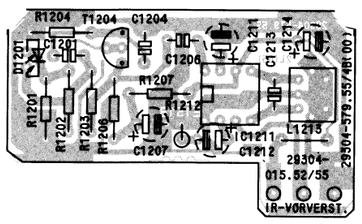
Bedien-Schublade **8 669 423 805**
Operating Insert
Inserto Comandi



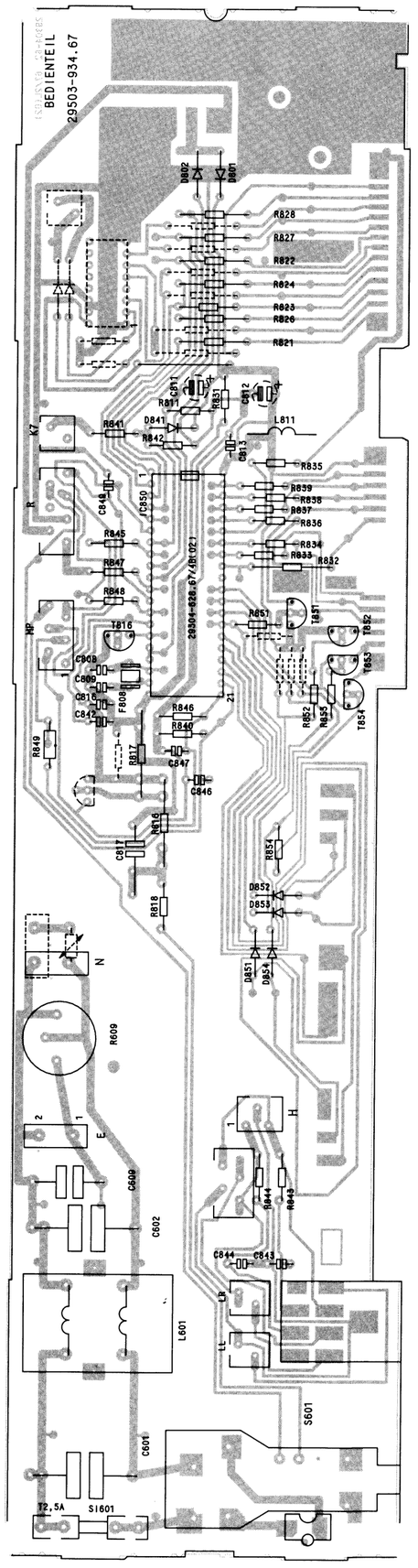
Netzschalter-Einheit **8 669 423 203**
Mains Switch Unit
Unita Interr. di Rete



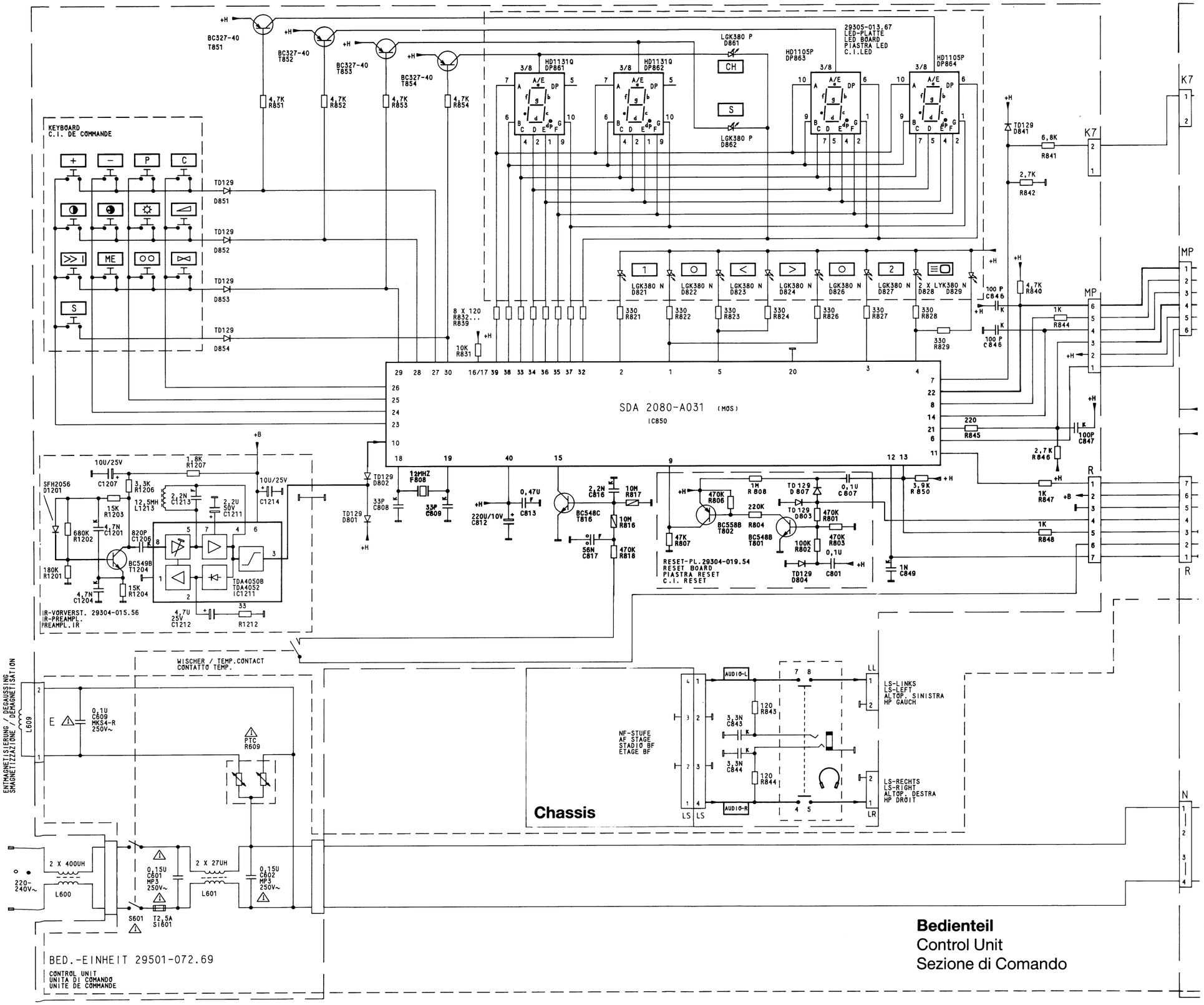
IR-Vorverstärker **8 669 433 406**
IR-Pre-Amplifier
Preamplifier IR



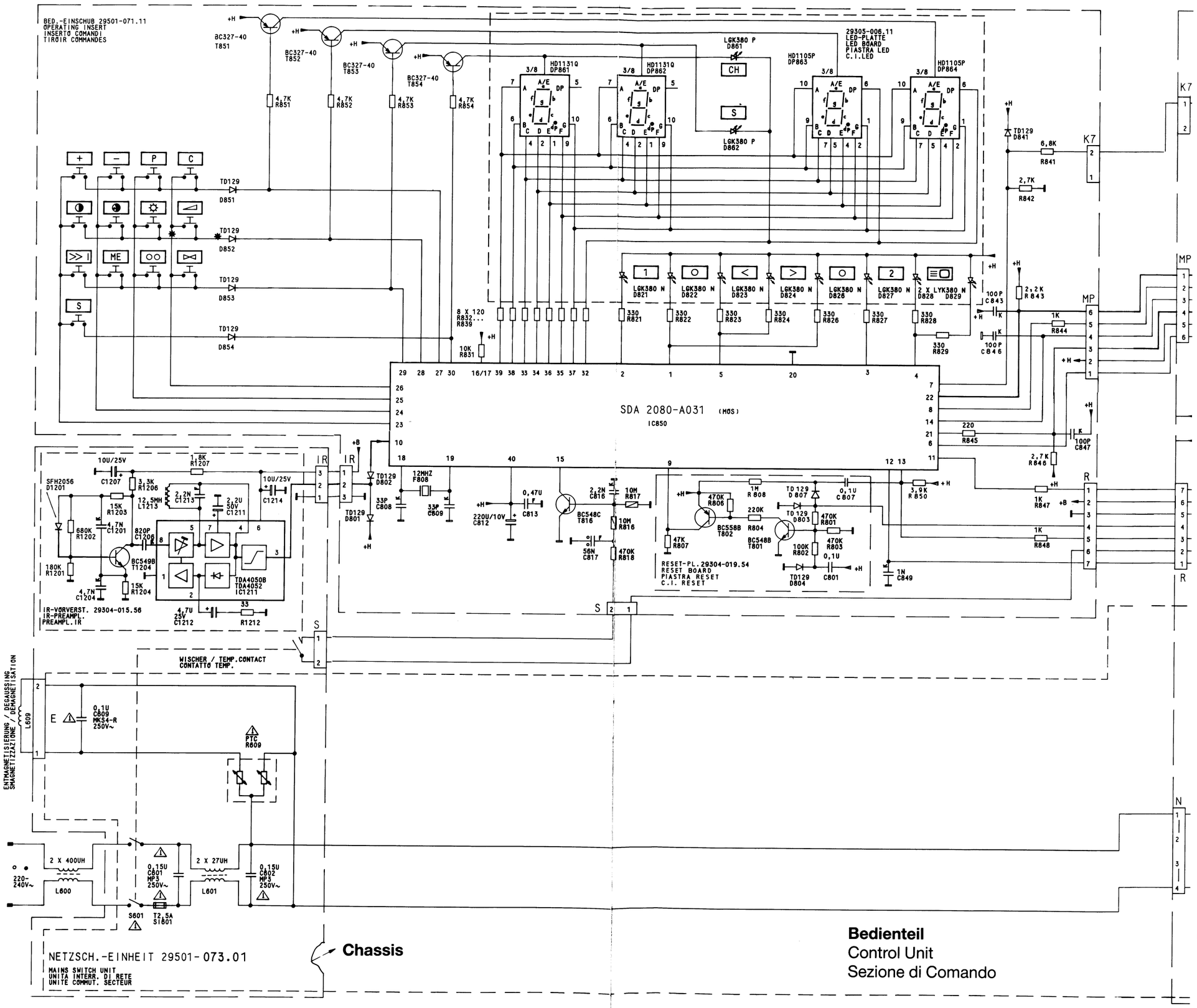
Bedienteil **8 669 433 434**
Control Unit
Sezione di Comando



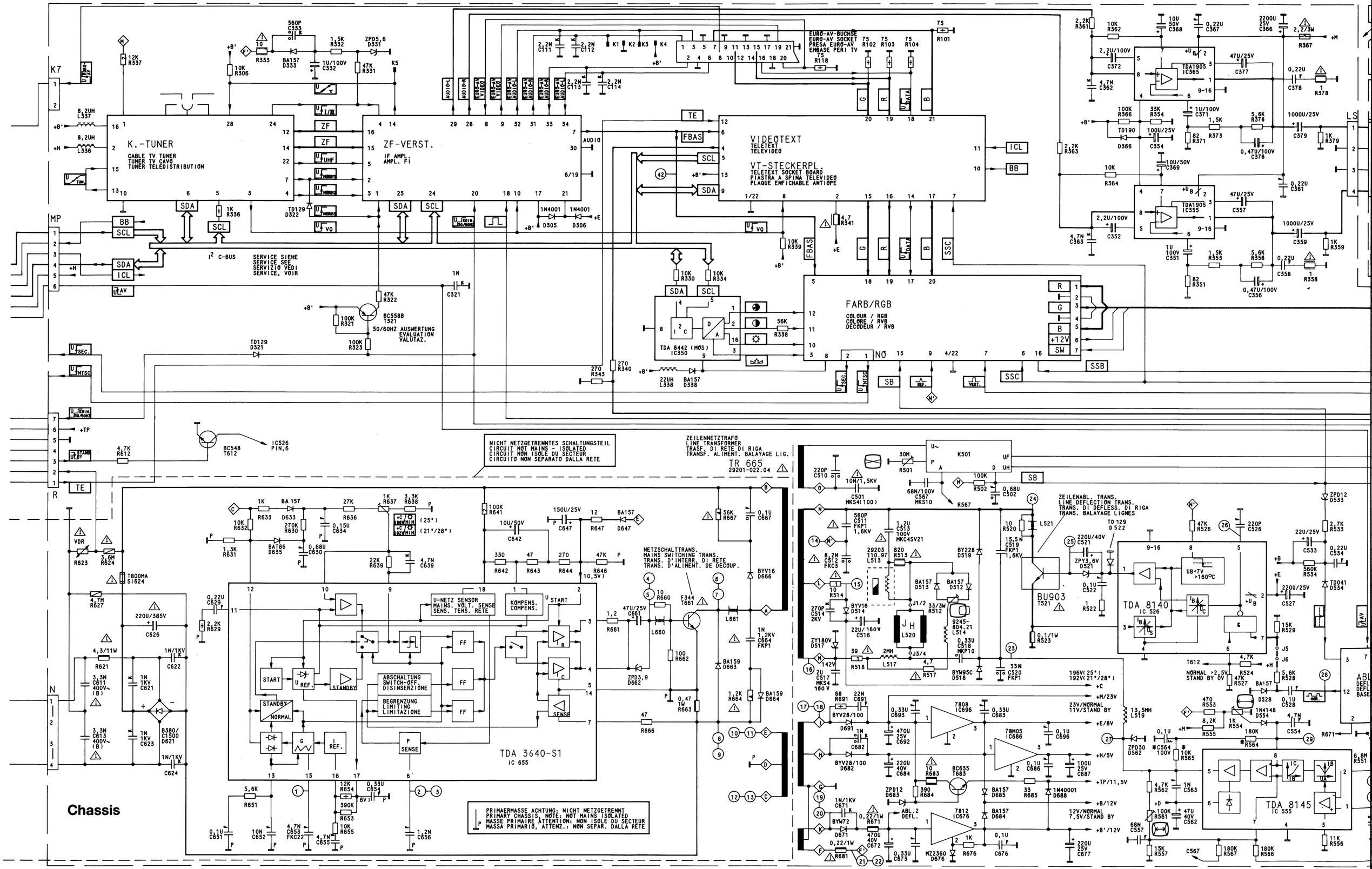
nur für:
only for: **PS 55-28**



nur für:
only for:



nur für:
only for: **PS 55-28 · IS 63-28 · IS 63-28 VT · IS 70-28 · IS 70-28 VT**



BILDRØHRPLATTE 29304-070.29 (8 669 423 919)
CRT BASE
PIASTRA CINESC.
C.I. TUBE CATHOD. -070.37 (8 669 423 927)

A 51 EAK 01X 05 (21") TINTED
A 66 EAK 01X 01 (28") TINTED
A 59 EAK 01X 01 (25") TINTED
A 66 EAK 51X 01 (28"HD) TINTED

nur/only/solo/seul.
IS 63-28 · IS 70-28

FM 100-42

CHASSIS 29701-048.09 (28") IS 70-28
TELAIO -048.14 (25") IS 63-28
-048.25 (21") PS 55-28

K.-TUNER
CABLE TV TUNER
TUNER TV CAVO
TUNER TELEDISTRIBUTION

ZF-VERST.
IF AMPL.
AMPL. FI

VIDEOTEXT
TELETEXT
TELEVIDEO

VT-STECKERPL.
TELETEXT SOCKET BOARD
PIASTRA A SPINA TELEVIDEO
PLAQUE ENFICHABLE ANTIOPE

EURO-AV-BUCHSE
EURO-AV SOCKET
PRESA EURO-AV
EMBASE PERI TV

FARB/RGB
COLOUR / RGB
COLORE / RVB
DECODEUR / RVB

TDA8442 (MOS)
IC350

50/60HZ AUSWERTUNG
EVALUATION
VALUTAZ.

I² C-BUS

NICHT NETZGETRENNTES SCHALTUNGSTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE

ZEILENNETZTRAFO
LINE TRANSFORMER
TRASF. DI RETE DI RIGA
TRANSF. ALIMENT. BALAYAGE LIG.
TR 665
29201-024.02

TDA 3640-S1
IC 655

NETZSCHALTTRANS.
MAINS SWITCHING TRANS.
TRANS. D'INTERR. DI RETE
TRAN. D'ALIMENT. DE DECOUP.

U-NETZ SENSOR
MAINS. VOLT. SENSE
SENS. TENS. RETE

KOMPENS.
COMPENS.

ABSCHALTUNG
SWITCH-OFF
DISINSERZIONE

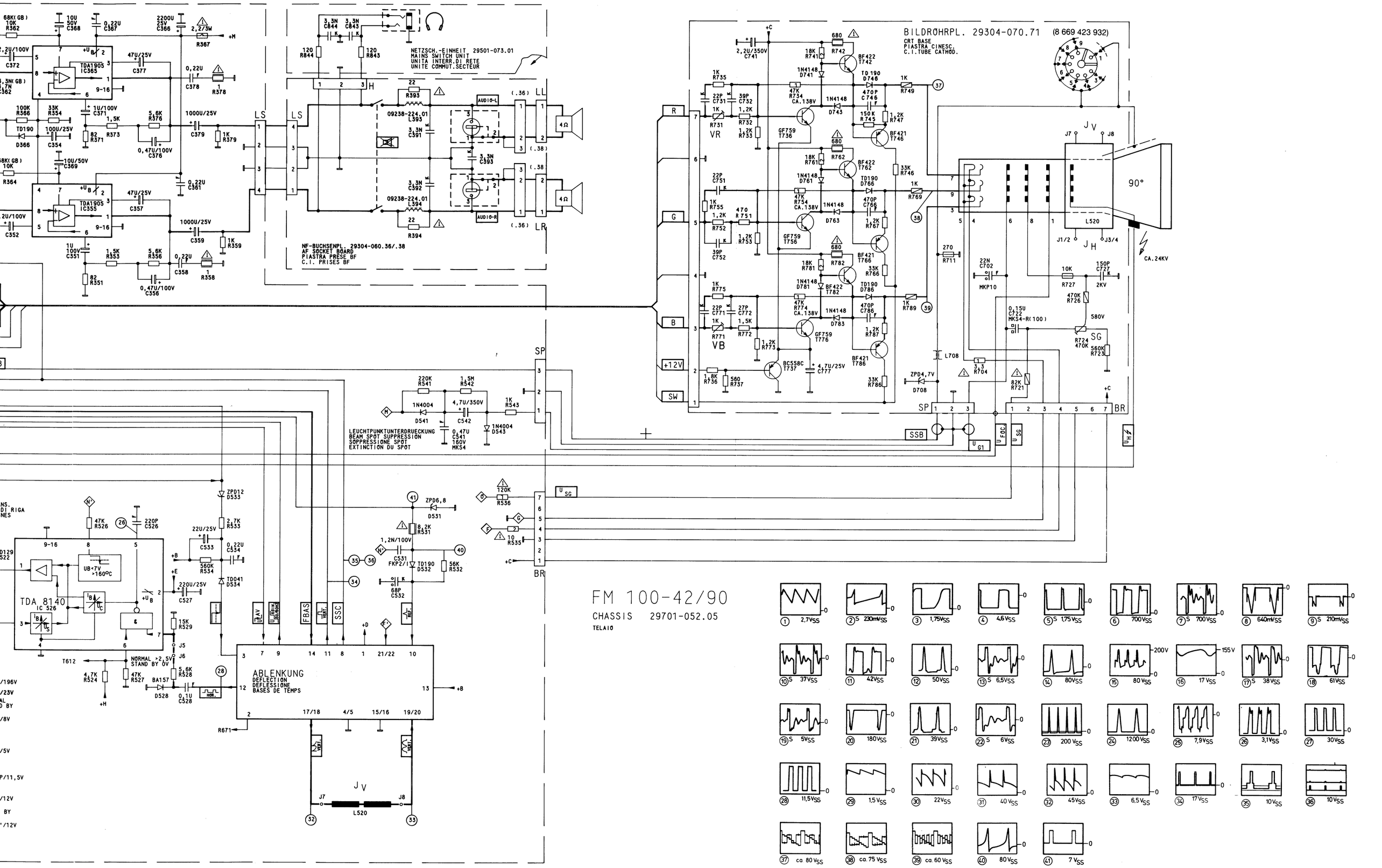
BEGRENZUNG
LIMITING
LIMITAZIONE

PRIMAERMASSE ACHTUNG: NICHT NETZGETRENNT
PRIMARY CHASSIS, NOTE: NOT MAINS ISOLATED
MASSE PRIMAIRE ATTENTION: NON ISOLE DU SECTEUR
MASSA PRIMARIO, ATTENZ.: NON SEPAR. DALLA RETE

ZEILENABBL. TRANS.
LINE DEFLECTION TRANS.
TRANS. DI DEFLESS. DI RIGA
TRANS. BALAYAGE LIGNES

TDA 8140
IC 526

Chassis

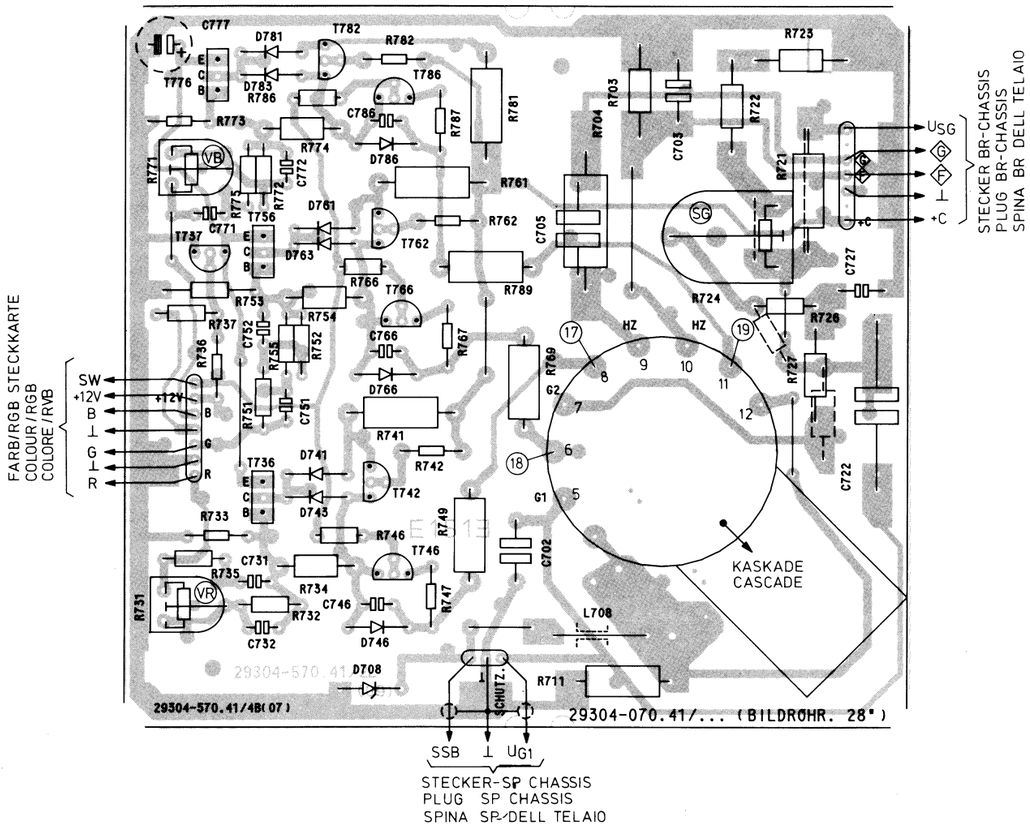


FM 100-42/90

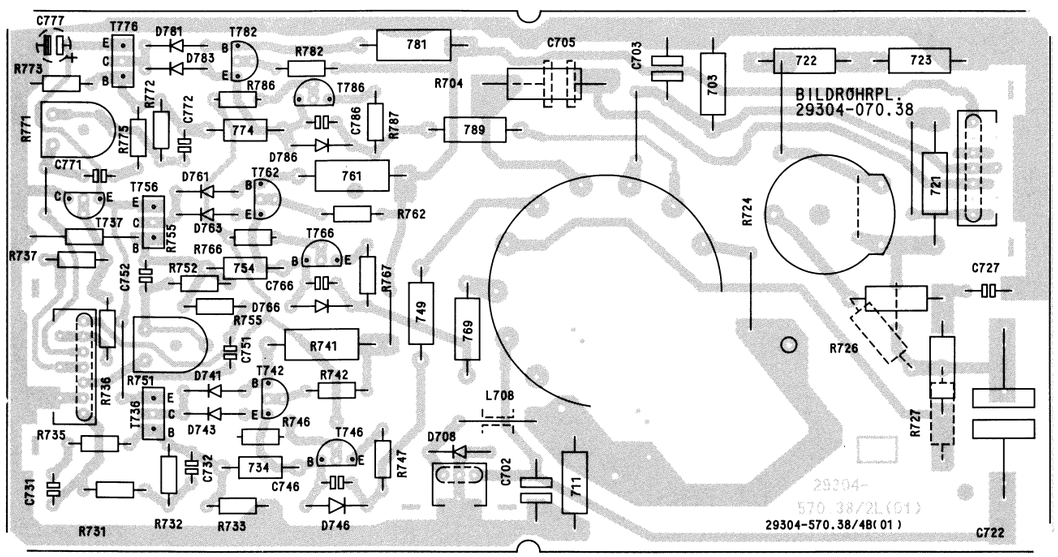
CHASSIS 29701-052.05

TELAIO

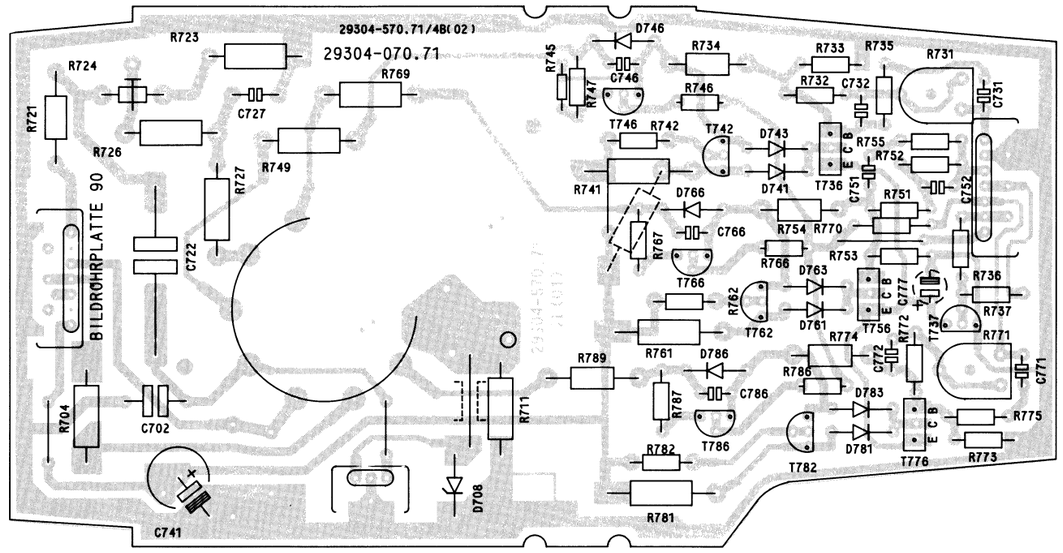
Bildrohr-Platte **8 669 423 927**
Picture Tube Board
Piastra cinescope



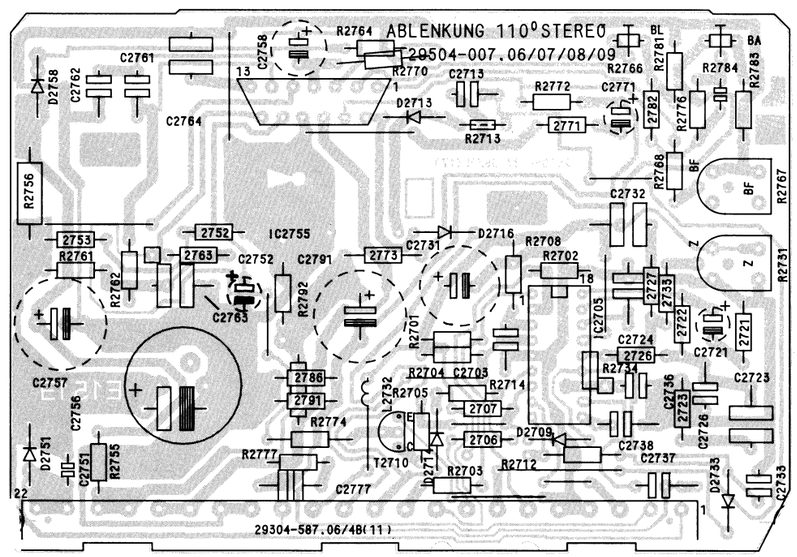
Bildrohr-Platte **8 669 423 919**
Picture Tube Board
Piastra cinescope

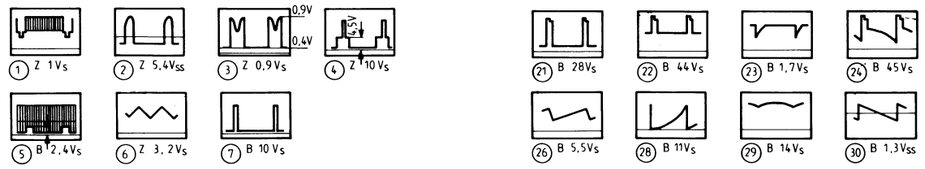


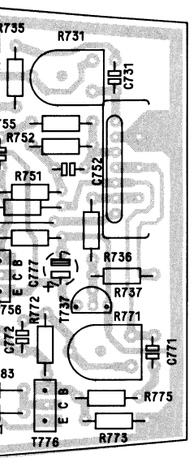
Bildrohr-Platte **8 669 423 932**
Picture Tube Board
Piastra cinescope

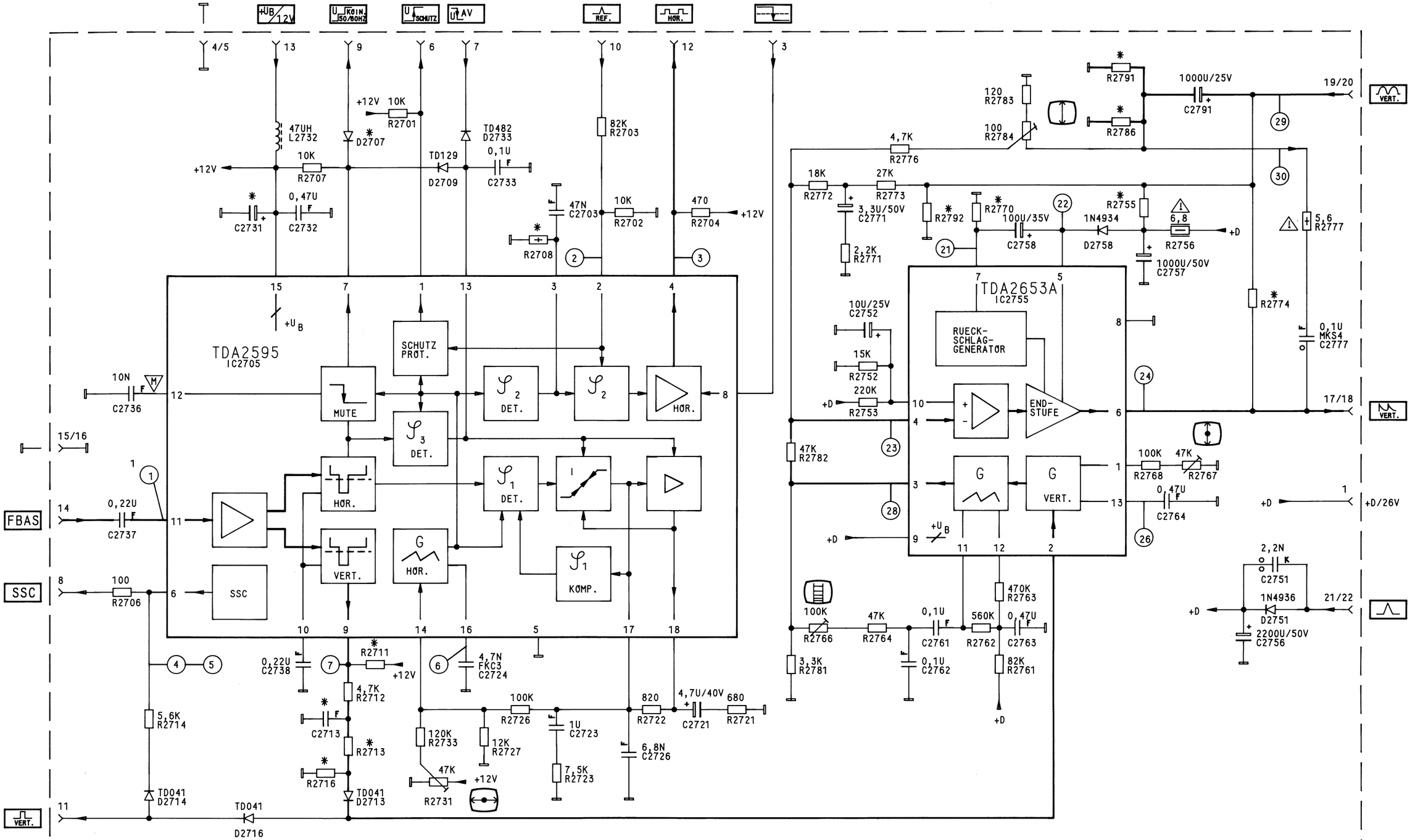


Ablenk-Modul **8 669 433 502**
Deflection Module
Modulo Deflessione









ABLENKUNG 110° DEFLECTION / DEFLESSIONE

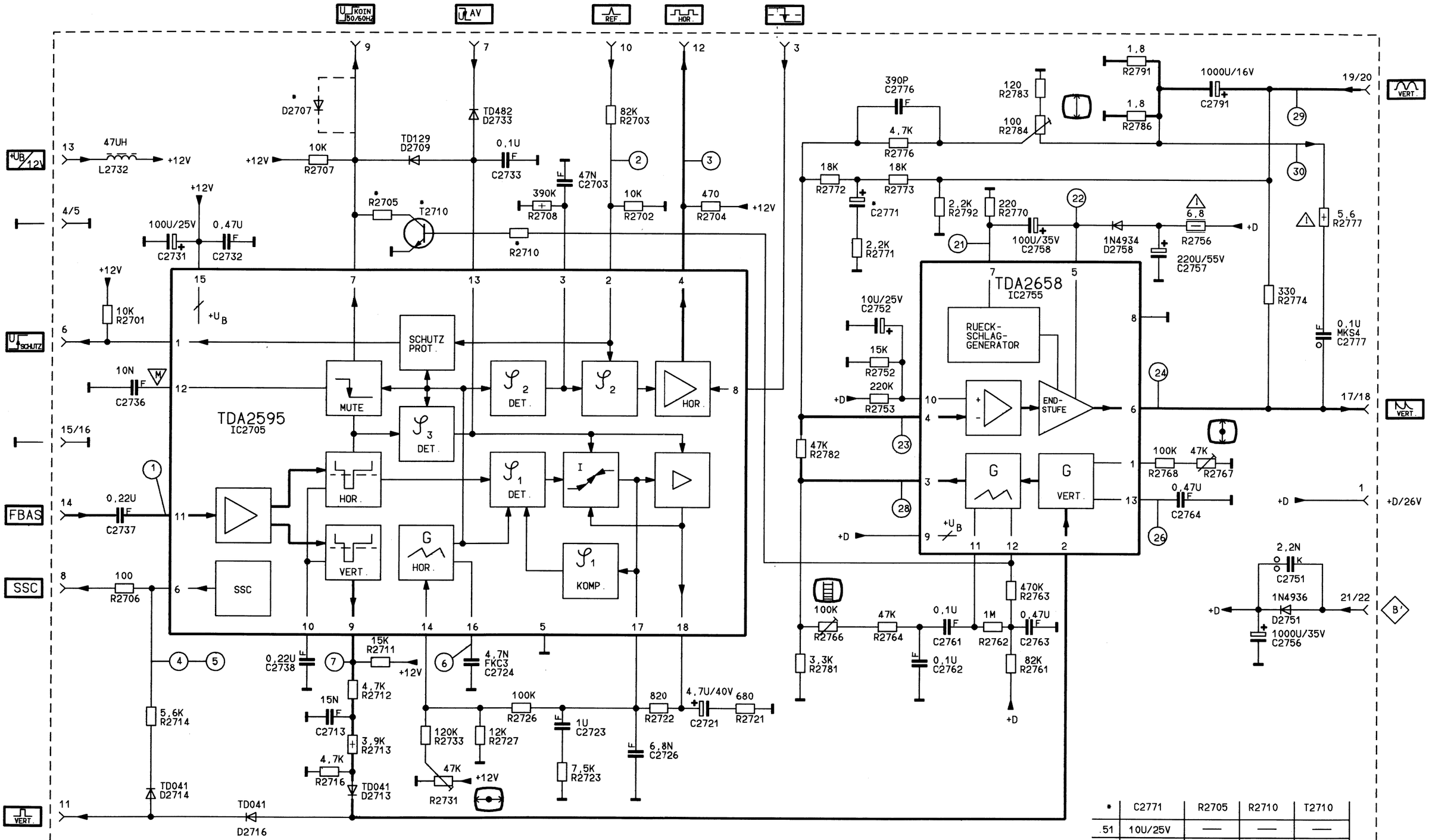
29504-007.07
-007.09 (8 669 433 502)
-007.10

PS 55-28 · IS 63-28 · IS 70-28

*	C2731	R2708	R2792	R2770	R2791	R2786	R2755	R2711	C2713	R2713	R2716	D2707	R2774
-007.07	100U/25V	390K	680	—	1,8	1,8	—	—	10N	•—•	—	BAT42	560
-007.09	100U/25V	220K	680	—	1,8	1,8	—	15K	15N	3,9K	4,7K	•—•	560
-007.10	1000U/25V	560K	1,8K	220	2,2	2,2	820	15K	15N	3,9K	4,7K	•—•	820

B 45V$_S$

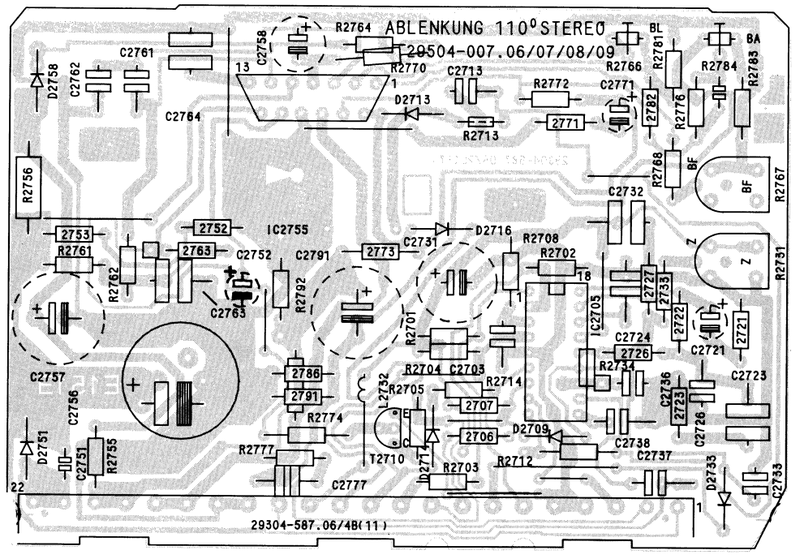
B 1,3V$_{SS}$

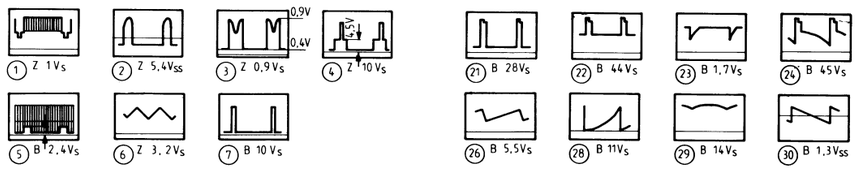


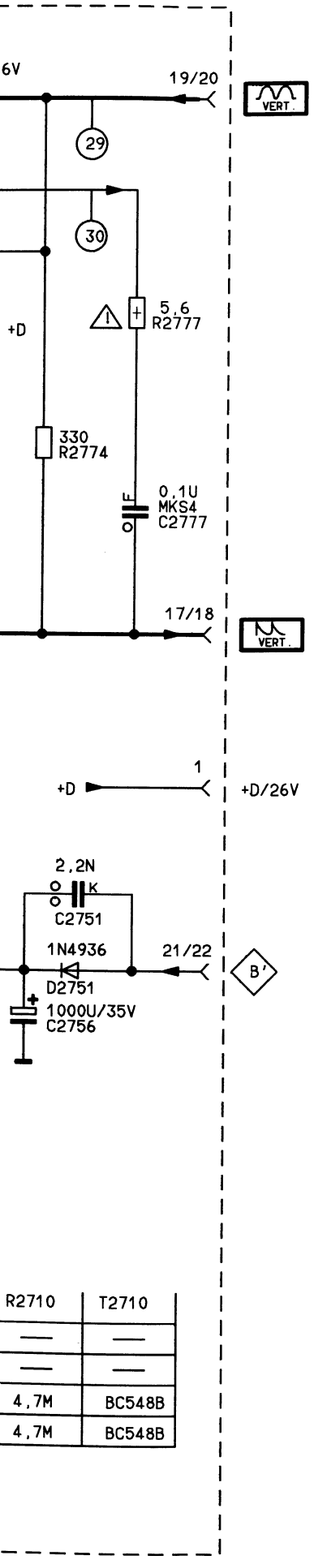
*	C2771	R2705	R2710	T2710
.51	10U/25V	—	—	—
.52	3,3U/25V	—	—	—
.53	10U/25V	10K	4,7M	BC548B
.54	3,3U/25V	10K	4,7M	BC548B

ABLENKUNG 90°/DEFLECTION/DEFLESSIONE **IS 55-28**
29504-007.51
.52 (8 669 433 505)
.53
.54

Ablenk-Modul **8 669 433 505**
Deflection Module
Modulo Deflessione



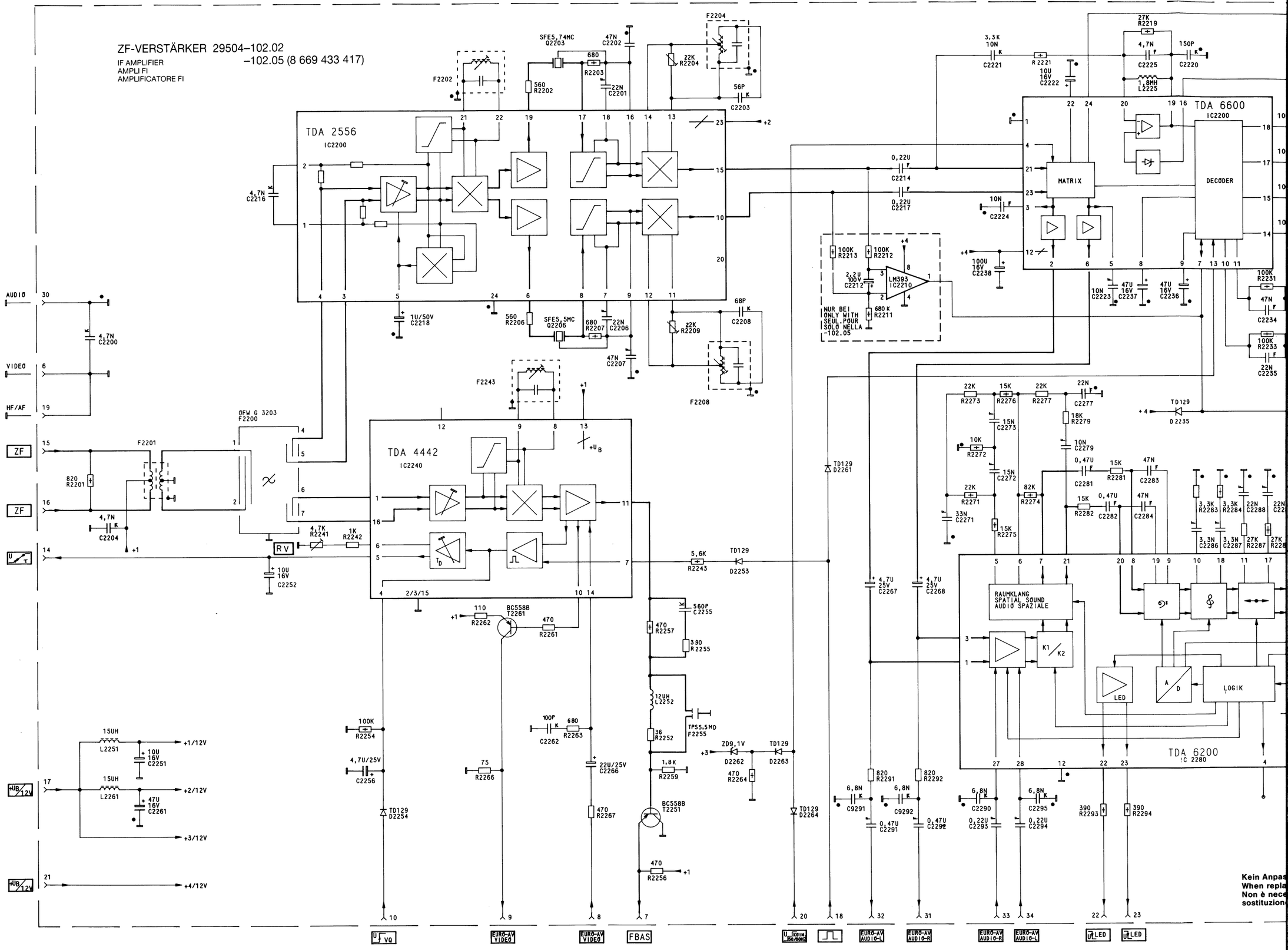


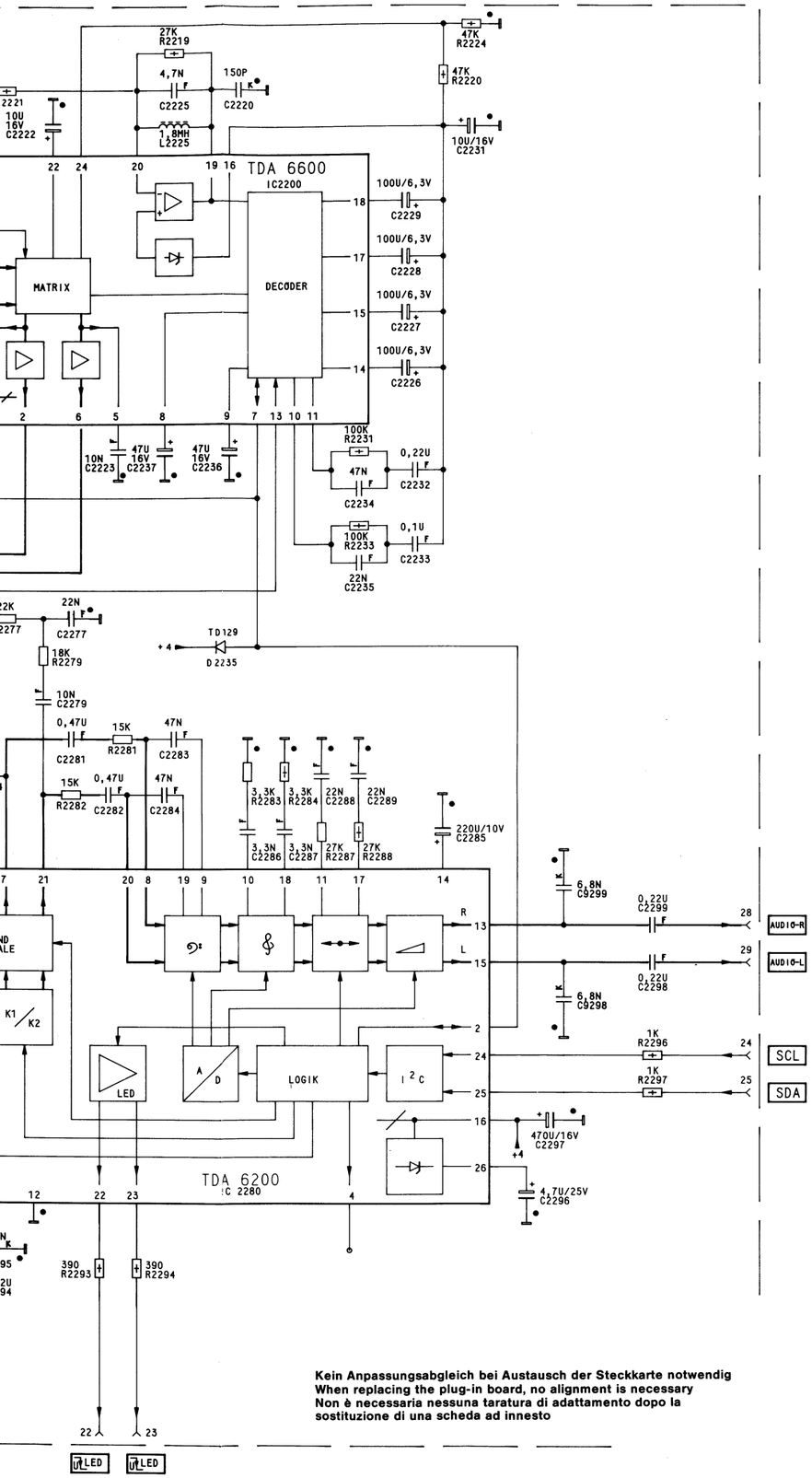


R2710	T2710
—	—
—	—
4,7M	BC548B
4,7M	BC548B

ZF-VERSTÄRKER 29504–102.02
–102.05 (8 669 433 417)

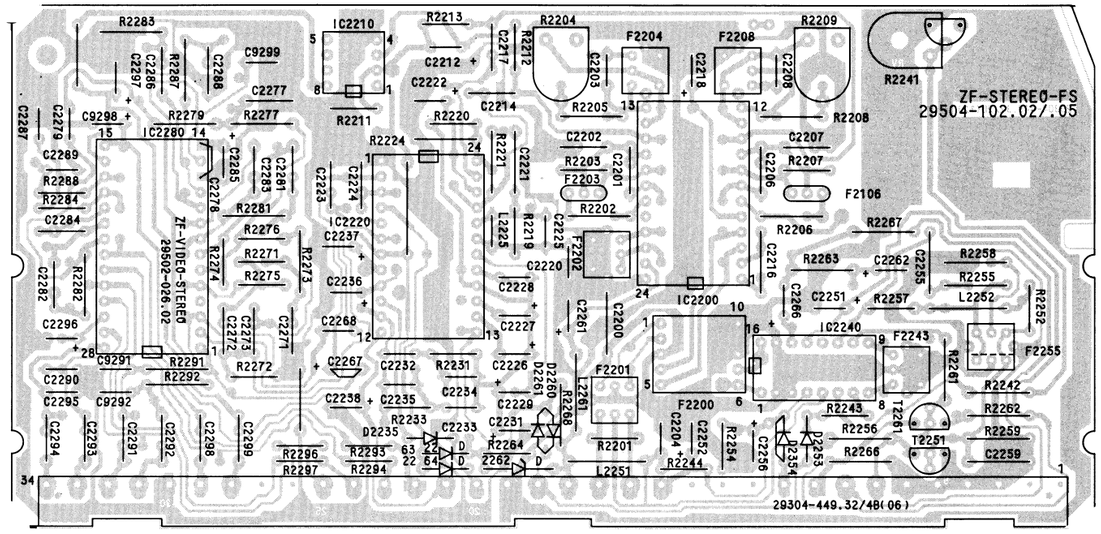
IF AMPLIFIER
AMPLI FI
AMPLIFICATORE FI





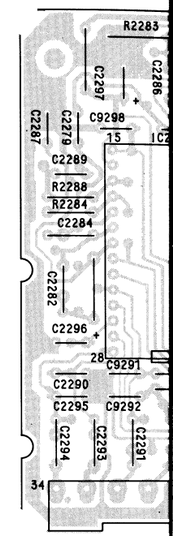
Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

ZF-Modul **8 669 433 417**
IF Module
Modulo FI



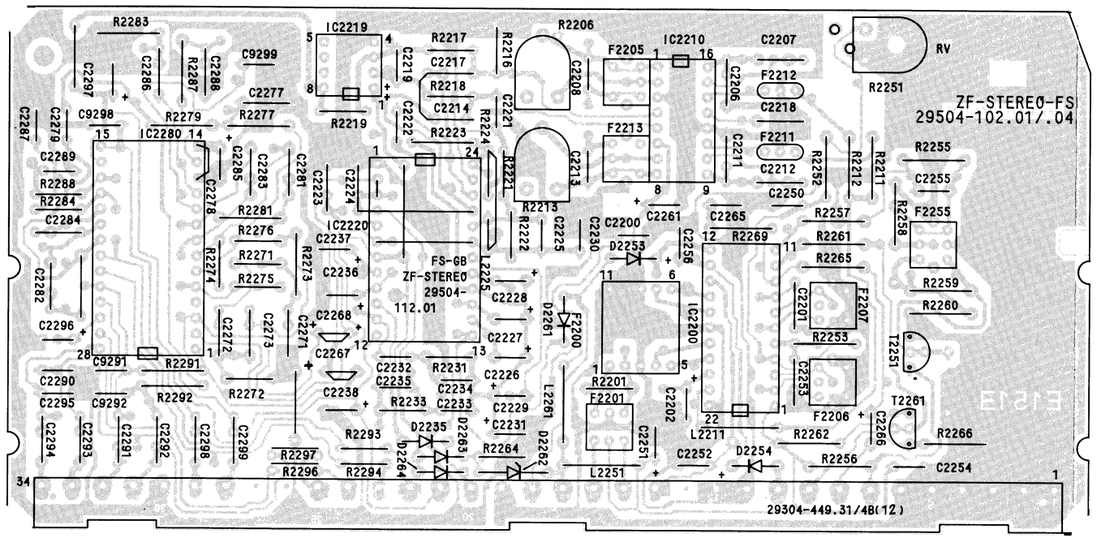
ZF-VERSTÄRKER 29504–102.01
–102.04 (8 669 433 416)

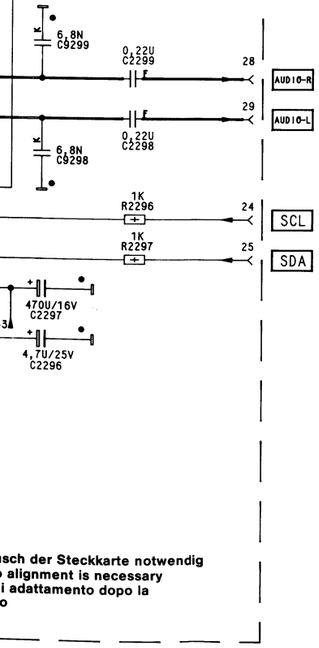
IF AMPLIFIER
AMPLI FI
AMPLIFICATORE FI



Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

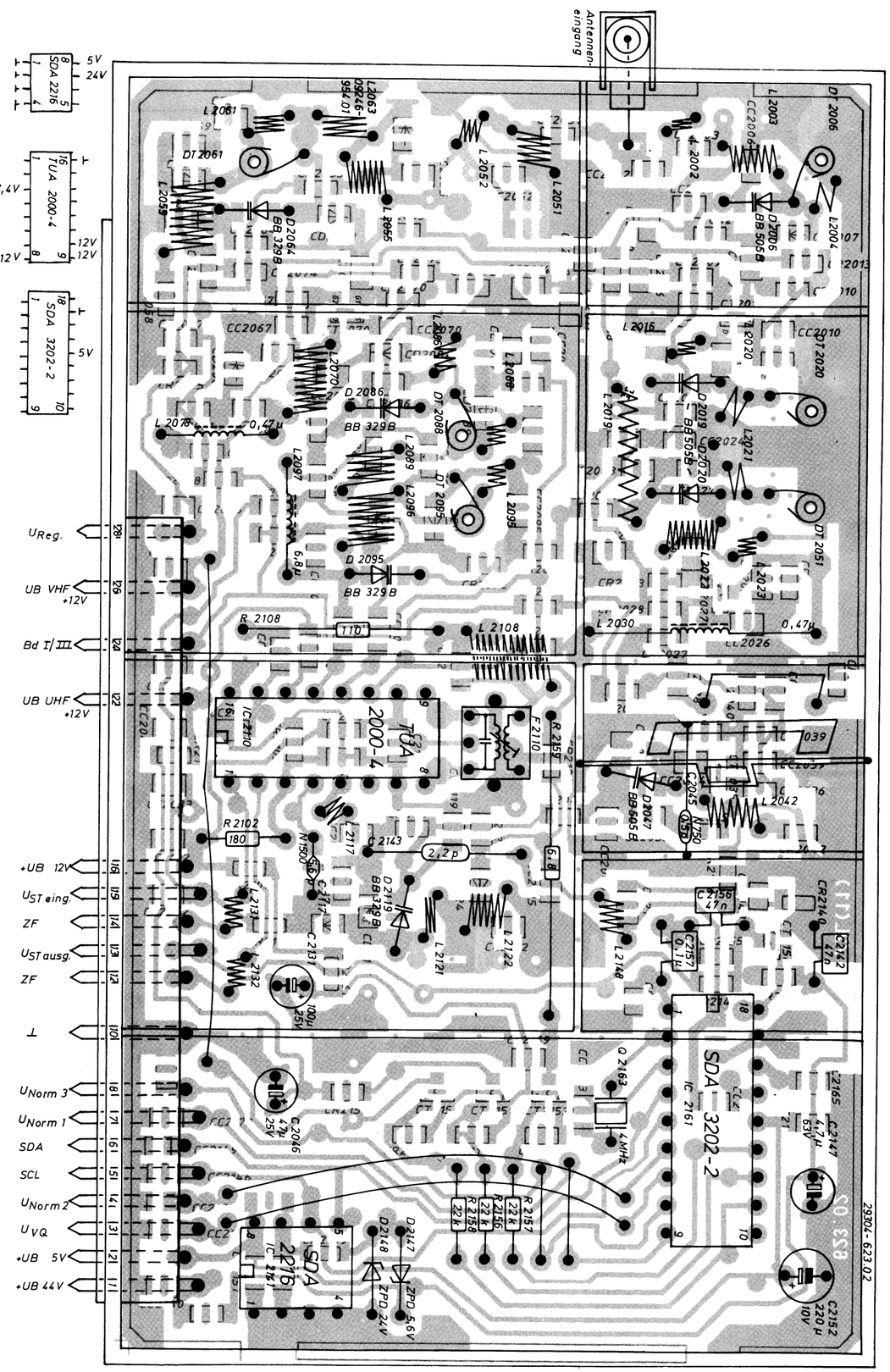
ZF-Modul **8 619 433 416**
IF Module
Modulo FI





usch der Steckkarte notwendig
o alignment is necessary
i adattamento dopo la
o

Tuner **8 669 433 400**



KABEL-TUNER
CABLE TV TUNER
TUNER TV CAVO

29504-101.01 (8 669 433 400)
-101.02

TUA2000-4
IC2110

U UHF 22 | U TUN. 13 | +44V 1 | +UB/5V 2 | SDA 6 | SCL 5

10P CC2047 | 2,2P CC2048 | 5,6P CC2 43 | 120 CR 2140 | 10N CC2049 | 8,2K CR2141 | 22K CR2142 | 2,2K CR2144 | 1N CC2140 | ZPD5,6 D2147 | 1,5K CR2149 | 100P CC2149 | 100P CC2146

BB505B D2047 | 18K CR2048 | MP10C | 0,6P CC2141 | 47N C2142 | 4,7U 63V C2147 | ZPD24 D2148 | 10N CC2148

1,5P CC2044 | 1N CC2154

9246-960 L2042 | 0,5P C2045 | 22 CR2043 | L2148 | 2,2P C2143 | 33 CR2042

SDA 2216 IC2141 MOS SPEICHER MEMORY MEMORIA

47U/16V C2046 | 0 CR 2118 | U UHF

56P CC2119 | BB609A D2119 | 18K CR2119 | B2M CD2115 | 18K CR2117 | B2M CD2117

47N C2156 | 22K CR2155 | 0,1U C2157 | 1N CC2158 | 1N CC2165

6,8K CR2104 | 56P CC2115 | MP10A | 18K CR2115 | L2117 | 5,6P C2117

BC847BR CT2156 | 6,8 CR2154

4MHZ Q2163 | 12P CC2163 | 10N CC2151 | 220U/10V C2152 | 10N CC2161

BC858BR CT2151 | 22K CR2151 | 22K R2156

L2121 | L2122 | 5,6P CC2122 | BA682 CD2124 | 1N CC2124 | 1N CC2125 | 2,2K CR2124

10N CC2159 | BC958BR CT2152 | 22K CR2152 | 6,8 R2159 | 22K R2157 | 22K R2158

BC858BR CT2153 | 22K CR2153

SDA 3202-2 IC2161

VHF | G VHF | ZF/UHF | ZF | U REF. | TUA2000-4 IC2110

MP9 | MP8 | MP7 | MP16 | MP14 | MP15

F2110 15P | 180 R2102 | 0 CR2110 | 10N CC2110 | 10N CC2102 | 1,5K CR2103 | 27P CC2106 | 110 R2108 | L2108 | 8,2P CC2107 | 0 CR 2107 | U I/III | U VHF

0 CR 2161 | 100U 16V C2131 | 1N CC2170 | 1N CC2171 | 10N CC2173 | 1N CC2174

10N CC2132 | L 2131 | L 2132

+UB/12V 16 | ZF 14 | ZF 12 | 10

U VQ 3 | U NORM2 4 | U NORM1 7 | U NORM3 8

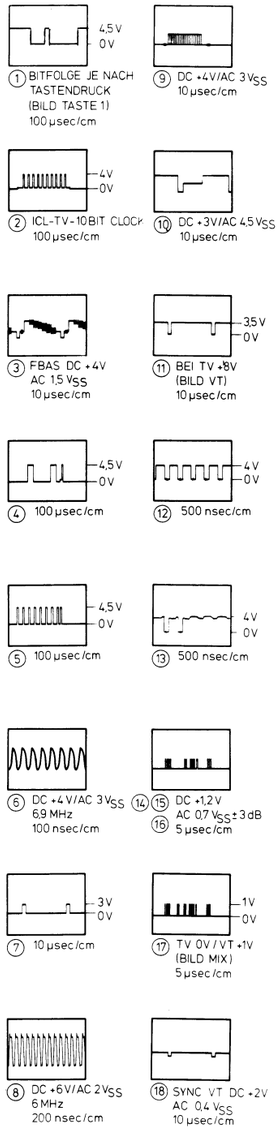
Kein Anpassungsabgleich bei Austausch der Steckkarte notwendig
When replacing the plug-in board, no alignment is necessary
Non è necessaria nessuna taratura di adattamento dopo la sostituzione di una scheda ad innesto

VIDEOTEXT-DECODER 29504–108.05

TELETEXT DECODER
DECODER TELEVIDEO

–108.25 (8 669 433 428)

•	IC 2830(MOS)	IC 2840(MOS)	C 2831	C 2832	C 2834	R 2831	R 2832	BR1	BR2	BR3	BR4
	PCD 8582 E^2PROM(2K)	PCD 8282 E^2PROM(2K)	2,7N	2,7N	0,1U	10K	10K	●—●	—	●—●	—
	SDA 2526 E^2PROM(2K)	SDA 2526 E^2PROM(2K)	—	—	0,1U	—	—	—	●—●	—	●—●
	X 2404 P E^2PROM(4K)		●—●	—	—	—	—	—	—	—	—
	X 2402(2K)	X 2402(2K)	●—●	●—●	0,1U	—	—	●—●	—	●—●	—


4,5 V
0 V
① BITFOLGE JE NACH TASTENDRUCK (BILD TASTE 1) 100 µsec/cm
⑨ DC +4V/AC 3 VSS 10 µsec/cm
4V
0V
② ICL-TV-10BIT CLOCK 100 µsec/cm
⑩ DC +3V/AC 4,5 VSS 10 µsec/cm
3,5 V
0 V
③ FBAS DC +4V AC 1,5 VSS 10 µsec/cm
⑪ BEI TV +8V (BILD VT) 10 µsec/cm
4,5 V
0 V
④ 100 µsec/cm
4 V
0 V
⑫ 500 nsec/cm
4,5 V
0 V
⑤ 100 µsec/cm
4 V
0 V
⑬ 500 nsec/cm
⑥ DC +4 V/AC 3 VSS 6,9 MHz 100 nsec/cm
⑭⑮⑯ DC +1,2 V AC 0,7 VSS ± 3 dB 5 µsec/cm
3 V
0 V
⑦ 10 µsec/cm
1 V
0 V
⑰ TV 0V / VT +1V (BILD MIX) 5 µsec/cm
⑧ DC +6 V/AC 2 VSS 6 MHz 200 nsec/cm
⑱ SYNC VT DC +2V AC 0,4 VSS 10 µsec/cm

VT-Nachrüstung und Anpassungsabgleich

Beim Nachrüsten der Videotext-Steckkarte muß die Videotext-Steckerplatte entfernt werden (* siehe Geräteschaltbild im Service Manual).

Der Einsteller R 2857 steht bei Auslieferung auf Linksanschlag (kleinste Höhenanhebung, ca. 2 dB). Treten trotz einwandfreiem Antennensignal Zeichenfehler auf, R 2857 langsam nach rechts verstellen, bis Fehler verschwinden. Nicht weiterdrehen, da Fehlerhäufigkeit wieder zunehmen kann.

Während des Abgleiches ist es notwendig, die Seite 199 ständig neu anzuwählen, da nur so die Seite neu eingelesen wird und eine Beurteilung der Fehlerschwelle möglich ist.

VT (GB: Teletext) instalation and matching adjustment

When fitting the Videotext (GB: Teletext) plug-in board, the Videotext plug plate has to be removed (* see circuit diagram in the Service Manual).

The control R 2857 is set in the fully anti clockwise position when the unit is delivered (smallest treble boost: approx. 2 dB). If, with a perfect aerial signal character faults occur, turn R 2857 slowly clockwise until the faults disappear. Do not turn R 2875 up any further as error rate may increase again.

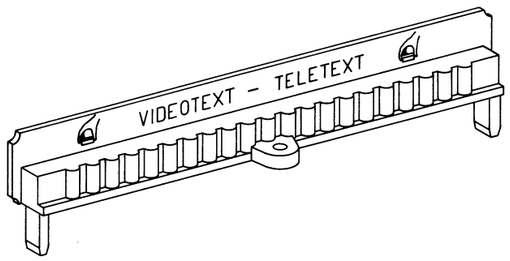
Page 199 must always be selected anew during the adjustment, as only this effects a new read-in of the page making it possible to evaluate the error level.

Montaggio e taratura d'addatamento della scheda ad innesto

Nel montare la scheda televideo togliere la piastrina televideo (* vedere lo schema del televisore nel manuale di servizio).

Il regolatore R 2857 viene fornito col cursore girato completamente all'estrema sinistra (minima esaltazione delle alte frequenze, ca. 2 dB). Se si manifestano errori di carattere, nonostante un perfetto segnale d'antenna, girare lentamente il cursore di R 2857 verso destra fino ad eliminare gli errori. Non girarlo oltre può riaumentare la presenza degli errori.

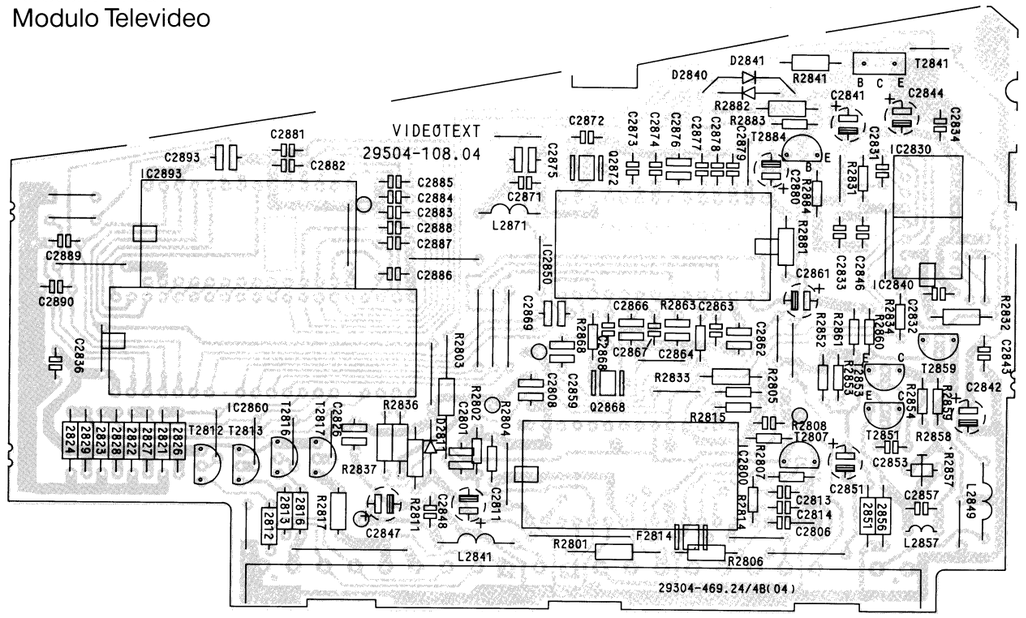
Durante la taratura è necessario selezionare ripetutamente la pagina 199, poiché solo così è possibile una nuova immissione della pagina ed una valutazione della soglia degli errori.



Videotext-Modul 8 669 433 428

Teletext Module

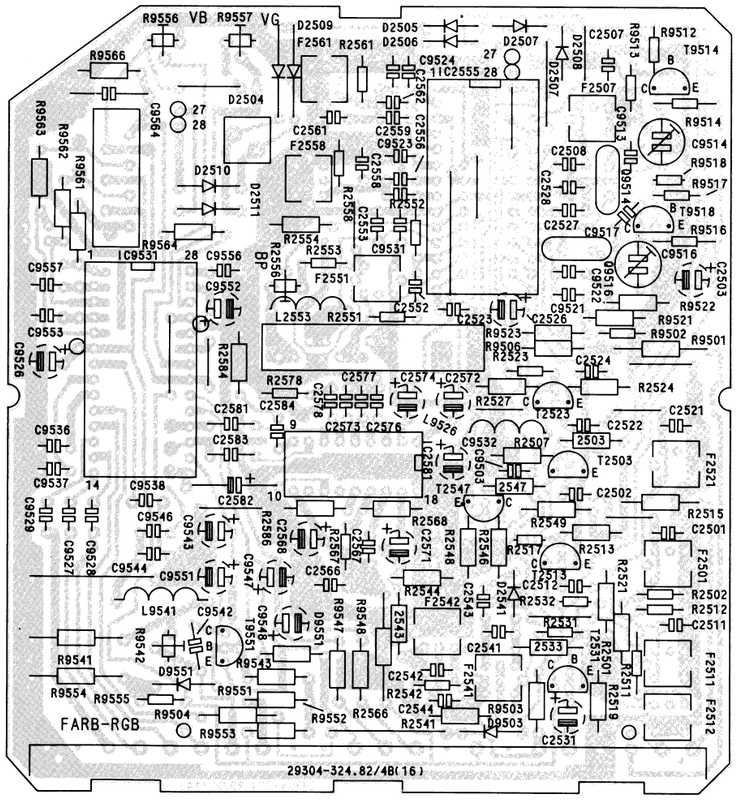
Modulo Televideo



Farb/RGB-Modul 8 669 433 418

Chromal/RGB Module

Modulo Colore/RVB



FARB-RGB 29504–105.21
–105.23 (8 669 433 418)

COLOUR / RGB
COULEUR / RVB
COLORE / RVB

TDA 4555
IC 2555

TDA 3505
IC 9531

NUR B.-105.23 ONLY WITH SEUL POUR SOLO NELLA

NUR B.-105.21/.23 ONLY WITH SEUL POUR SOLO NELLA

SECAM

FBAS

SSC

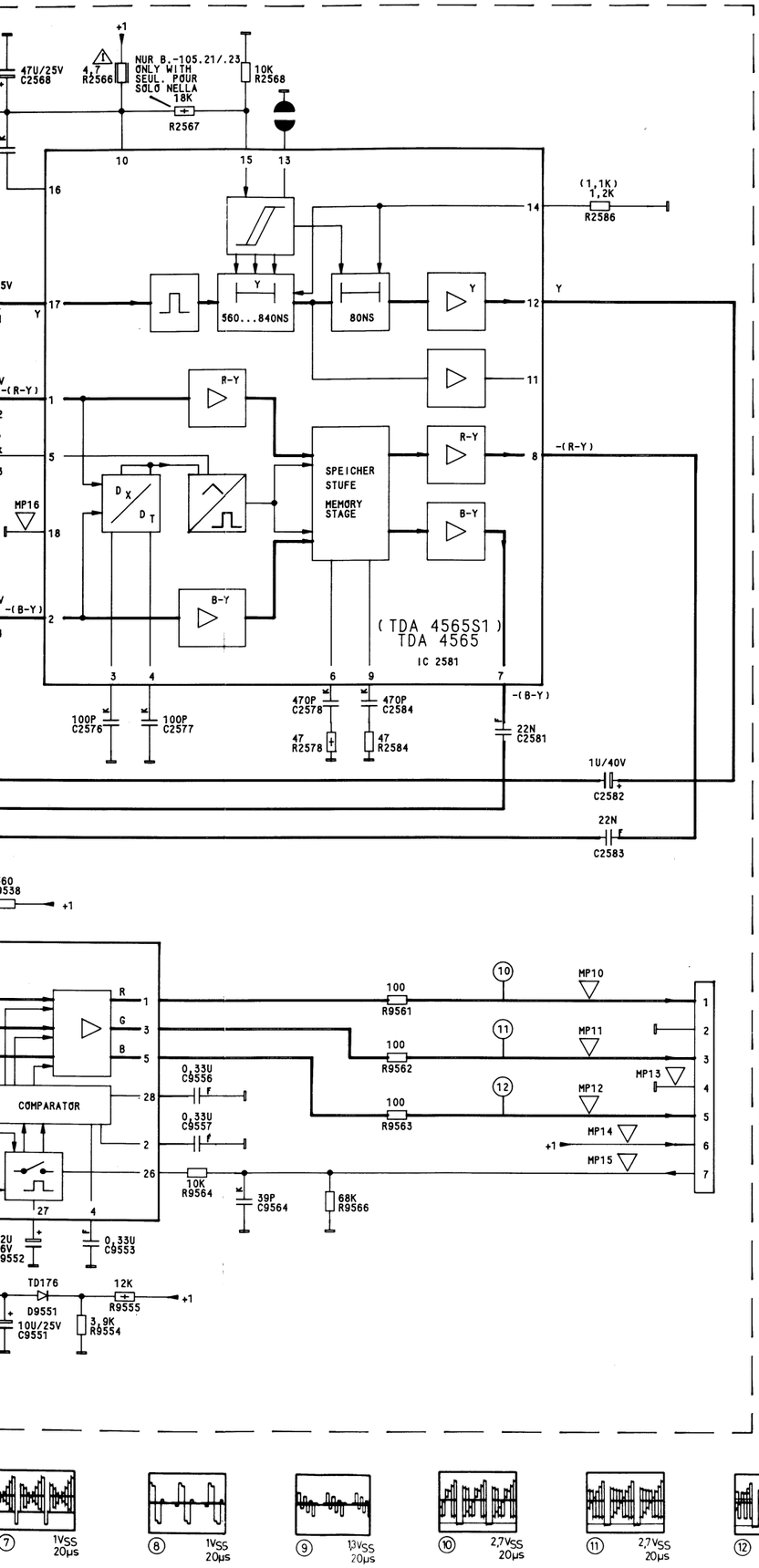
SSB

SB

R

G

B



1. **Weißabgleich**
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom, ◑ max. einstellen.
   - Regler VG und VB (Bildrohrplatte) so einstellen, daß keine Verfärbungen in den Grauwerten sichtbar sind.

2. **Sperrpunktabgleich**
   Eine manuelle Einstellung ist nicht möglich, da die Steckkarte eine automatische Dunkelstromregelung besitzt. Kontrolle des Sperrpunkts (Oszilloskop erforderlich).
   - FuBK-Testbild einspeisen.
   - ◑ min., ☼ nom., ◑ min., einstellen.
   - Tastkopf an den Kollektoren der Transistoren T 736, T 756, T 776 anhängen (Bildrohrplatte). Die Schwarzwerte der drei Kathodensignale liegen bei ca. 140-150V.

3. **Einstellungen im Farbkanal**
   - PAL-Testbild einspeisen.
   - FK nom., H nom. K max. einstellen.
   - IC-Pin 28 vom TDA 4555 mit +12V verbinden.
   - IC-Pin 17 vom TDA 4555 mit Masse verbinden.
   - Mit Trimmer C9516 die durchlaufenden Farbbalken zum Stehen bringen.
   - Kurzschlußbrücken entfernen.
   - Tastkopf an MP 12, mit Regler BP und Spule LZ die Doppelbilder des B-Signals zur Deckung bringen.
   - SECAM-Testbild einspeisen.
   - Tastkopf an Pin 1 vom TDA 4555 anschließen, mit Spule DR Nullinie des (R-Y)-Signals auf Zeilenniveau bringen.
   - Tastkopf an Pin 3 vom TDA 4555 anschließen, mit Spule DB Nullinie des (B-Y)-Signals auf Zeilentastniveau bringen.
   - Spule F 2521 so einstellen, daß das (B-Y)-Signal keine Überschwinger hat.

4. **Strahlstrom**
   - Der Regler "SSB" wird werkseitig auf Mittelwert eingestellt.
   - Sollte bei vollem Kontrast und normal eingestellter Helligkeit in Spitzenweißfeldern des Sendertestbildes eine Defokussierung (starke Unschärfe bei weißen Schriftzeichen in Bildröhrenmitte) auftreten, so muß mit Regler "SSB" auf scharfe Schriftkonturen eingestellt werden (Reduzierung des Spitzenstrahlstromes).

1. **White level adjustment**
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to max.
   - Adjust presets VG and VB (CRT socket board) so that the picture does not show any colouration.

2. **Adjustment of cut-off point**
   Manual adjustment is not possible, as the circuit board employs an automatic dark current control circuit.
   To check cut-off point (oscilloscope required), proceed as follows:
   - Display colour bar test pattern.
   - Set ◑ to min., ☼ to nom., ◑ to min.
   - Connect test probe to collectors of T 736, T 756, T 776 (CRT socket board).
     The black leves of the three cathode signals should be 140-150V.

3. **Adjustments in chroma channel**
   - Display PAL test pattern.
   - Adjust colour level and brightness to nominal value, contrast to maximum.
   - Connect pin 28 of IC TDA 4555 to +12V supply.
   - Connect pin 17 to IC TDA 4555 to chassis.
   - Adjust trimmer C9516 for stationary pattern in colour bars.
   - Remove wire links.
   - Connect test probe to test point MP 12. LBring the double image produced by the B-signal to coincidence by adjusting the preset BP and the coil LZ.
   - Display SECAM test pattern.
   - Connect test probe to pin 1 of IC TDA 4555.
   - Use coil DR to align zero level of the (R-Y) signal with the line black level.
   - Connect test probe to pin 3 of IC TDA 4555.
   - Use coil DB to align zero level of the (B-Y) signal with the line black level.
   - Adjust coil F2521 so that the (B-Y) signal is free of overshooting.

4. **Beam current**
   - During manufacture the control "SSB" is adjusted to middle value.
   - If during max. contrast and normal brightness adjustment the peak-white fields of the test picture should be defocused (in the middle of the screen white letters are very distorted) the contours of the letters must be adjusted using control "SSB" (reducing the peak beam current).

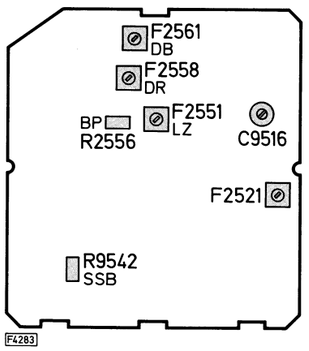
1. **Taratura del bianco**
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al massimo.
   - Con i regolatori VG e VB (piastra cinescopio) eliminare eventuali macchie di colore.

2. **Taratura del punto di blocco**
   Una regolazione manuale non è possibile, poiché questa scheda incorpora una regolazione automatica della corrente d'interdizione.
   Controllo del punto di blocco (é necessario un oscilloscopio):
   - Applicare un monoscopio FuBK.
   - Regolare ◑ al minimo, ☼ sul valore nominale e ◑ al minimo.
   - Collegare la sonda ai collettori dei transistori T 736, T 756, T 776 (piastra cinescopio).
     Valore nero dei tre segnali catodici ca. 140-150V.

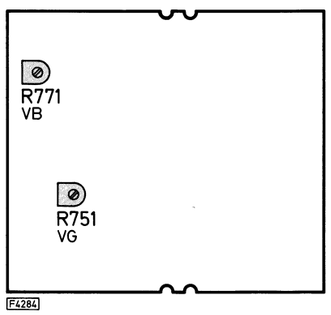
3. **Regolazione del canale colore**
   - Applicare un monoscopio PAL.
   - Regolare FK e H sul valore nominale, K al massimo.
   - Sull'integrato TDA 4555 collegare pin 28 a +12V.
   - Sull'integrato TDA 4555 collegare pin 17 a massa.
   - Con C9516 fermare le barre colorate scorrevoli.
   - Togliere i cortocircuiti.
   - Collegare la sonda a MP 12, con il regolatore BP e la bobina LZ portare a copertura le immagini doppie del segnale B.
   - Applicare un monoscopio SECAM.
   - Collegare la sonda al pin 1 dell'integrato TDA 4555, con la bobina DR portare la linea zero del segnale (R-Y) sul livello della frequenza di riga.
   - Collegare la sonda al pin 3 dell'integrato TDA 4555, con la bobina DB portare la linea zero del segnale (B-Y) sul livello della frequenza di riga.
   - La bobina F2581 applicarla cosi in modo che il segnale (B-Y) sia chiaro.

4. **Corrente catodica**
   - Il regolatore "SSB" viene regolato già in fabbrica su valori medi.
   - Se con il contrasto al massimo ed una regolazione normale della luminosità dovesse presentarsi una sfocalizzazione nei campi ultrabianchi del cinescopio (le lettere bianche al centro del cinescopio risultano molto sfuocate), agire sul regolatore "SSB" per mettere a fuoco i contorni delle lettere (riducendo la corrente catodica di picco).

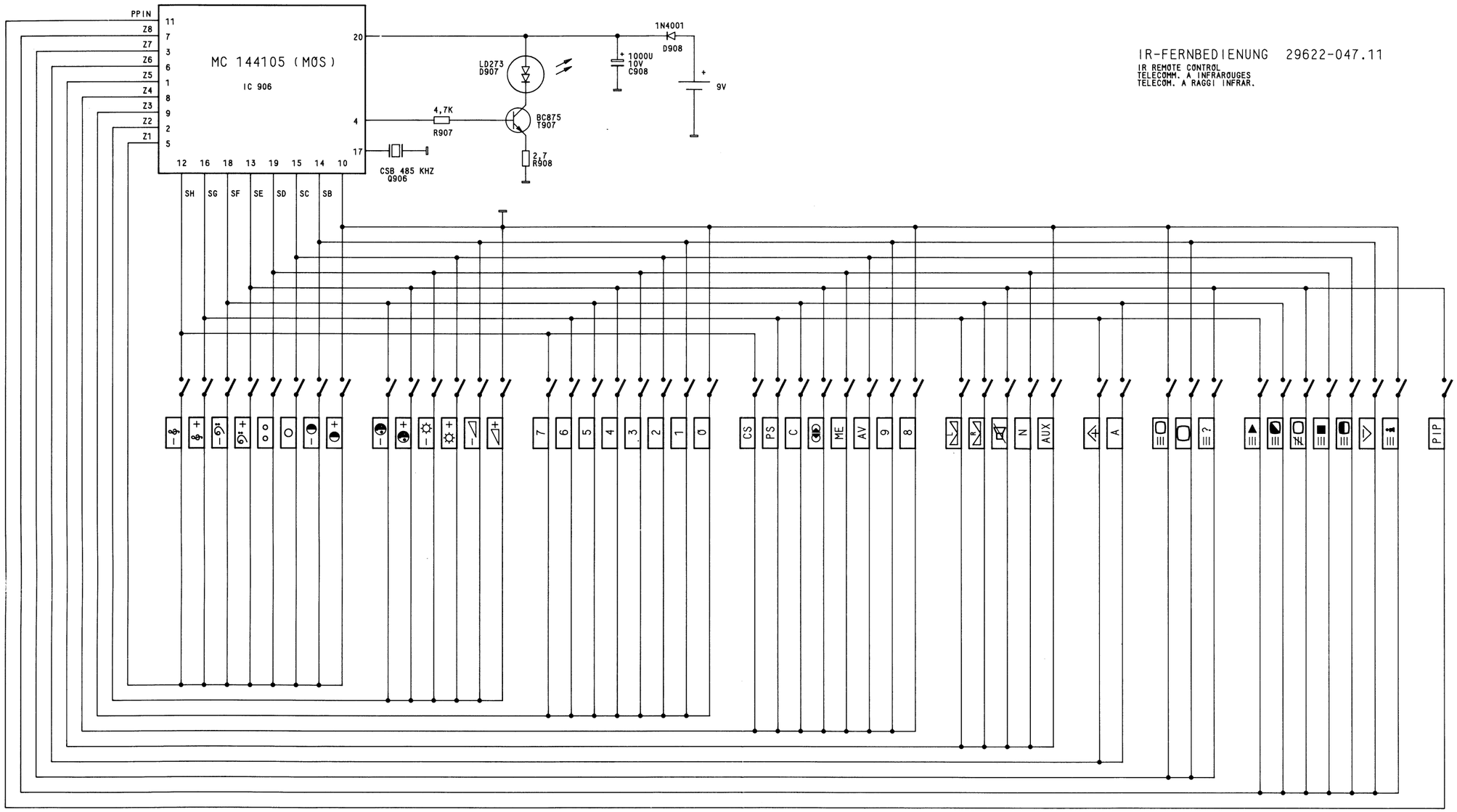
Farb/RGB-Modul
Chromal/RGB Module
Modulo Colore/RVB



Bildrohr-Platte
Picture Tube Board
Piastra cinescopio



Fernbedienung **8 669 493 802**
Remote Control
Comando a distanza



29304-004.11 KEYBOARD

Funktionsüberb

Das Zeilennetzteil hat 2
– Den Zeilennetztrafo
– Die Netzteilfrequenz

Der ZNT dient der galvan
Wicklungen des ZNT wi
Zeilentrafowicklung N-M

Die Anlaufschaltung

Die Anlaufspannung erh
erreicht, steuert IC 655
Stromaufnahme, und die

Der Oszillator im IC TDA 36

Die Steuerimpulse für T
mendes Glied (Synchron
12 größer als +1 V_s sind.
Bei Vollbetrieb (EIN) ste

Die Zeilenendstufe

Im Stand-by-Betrieb ist d
triebszustand »EIN«. Die
Betriebsspannung.

Die Spannungsstabilisierun

In »stand-by« wird der In
an Pin 2 IC TDA 3640 ist +

Bei Vollbetrieb »EIN« mu
impuls der Wicklung C-b
breite bzw. Hochspannu
die +C-Spannung mit R

Schutzschaltungen des TD

Es erfolgt sofortige Absc
– zu kleiner Betriebssp
– zu großem I_{CE} des T 5
– Netzüberspannung (S
– Netzunterspannung (
– zu großer Hochspann
– überhöhter Kristallte

Schutzschaltungen des TD

Es erfolgt sofortige Absc
– zu geringer Betriebss
– Störimpulsen (falsch
– überhöhter Kristallte

Funktionsüberblick

Das Zeilennetzteil hat 2 Merkmale:
- Den Zeilennetztrafo (ZNT) mit einem Ferritkern. Dieser Trafo hat Wicklungen für Netzteil und Zeilenendstufe.
- Die Netzteilfrequenz entspricht der Zeilenfrequenz.

Der ZNT dient der galvanischen Trennung, der Zeilenablenkung und der Erzeugung der Betriebsspannung. Durch feste und lose Kopplung der Wicklungen des ZNT wird erreicht, daß die Betriebsspannungen ausreichend belastbar sind, und keine nennenswerte Rückwirkung auf die Zeilentrafowicklung N-M entsteht.

Die Anlaufschaltung

Die Anlaufspannung erhält IC 655 vom Brückengleichrichter D 621 über R 641. Werden über die Widerstände R 642, 643 und 644 an Pin 2 ca. 10 V erreicht, steuert IC 655 über Pin 3 T 661 an (Voraussetzung: Pin 18 > 10 V).Das Zeilennetzteil schwingt an. Gleichzeitig steigt über Pin 2 die Stromaufnahme, und die Wicklung E/D des ZNT übernimmt die weitere Betriebsspannungsversorgung (D 647, R 647, C 647).

Der Oszillator im IC TDA 3640

Die Steuerimpulse für T 661 erzeugt ein Oszillator, der nach dem Schwellwertprinzip arbeitet. C 653 ist ein extern beschaltetes frequezbestimmendes Glied (Synchronbereich des Oszillators ca. 14-17 kHz). Der Oszillator schwingt so lange frei, bis die Referenzimpulse vom ZNT an Pin 12 größer als +1 V_s sind.
Bei Vollbetrieb (EIN) stehen an Pin 12 ca. +5 V_s.

Die Zeilenendstufe

Im Stand-by-Betrieb ist der Ablenktransistor T 521 leitend. Periodisches zeilenfrequentes Ansteuern des Ablenktransistors entspricht dem Betriebszustand »EIN«. Die Energie für den Zeilenablenkkreis wird aus der EMK der Spule M-N gewonnen. Somit braucht T 521 keine zusätzliche Betriebsspannung.

Die Spannungsstabilisierung

In »stand-by« wird der Impuls der Wicklung E-D (feste Kopplung mit Wicklung A-B) als Referenz zur Stabilisierung herangezogen. Regelgröße an Pin 2 IC TDA 3640 ist +10,5 V.

Bei Vollbetrieb »EIN« muß die Spannung im Zeilenablenkkreis (Trafowicklung M-N) stabil gehalten werden. Dies geschieht über den Referenzimpuls der Wicklung C-D, die mit der Wicklung M-N fest gekoppelt ist. Die über D 633 gewonnene Gleichspannung ist proportional zur Bildbreite bzw. Hochspannung und wird über Pin 10 mit der an Pin 11 meßbaren Referenzspannung (ca. 3 V) verglichen. In diesem Regelzweig wird die +C-Spannung mit R 637 eingestellt. Bei 25"-Geräten auf 196 V und bei 28"-Geräten auf 192 V.

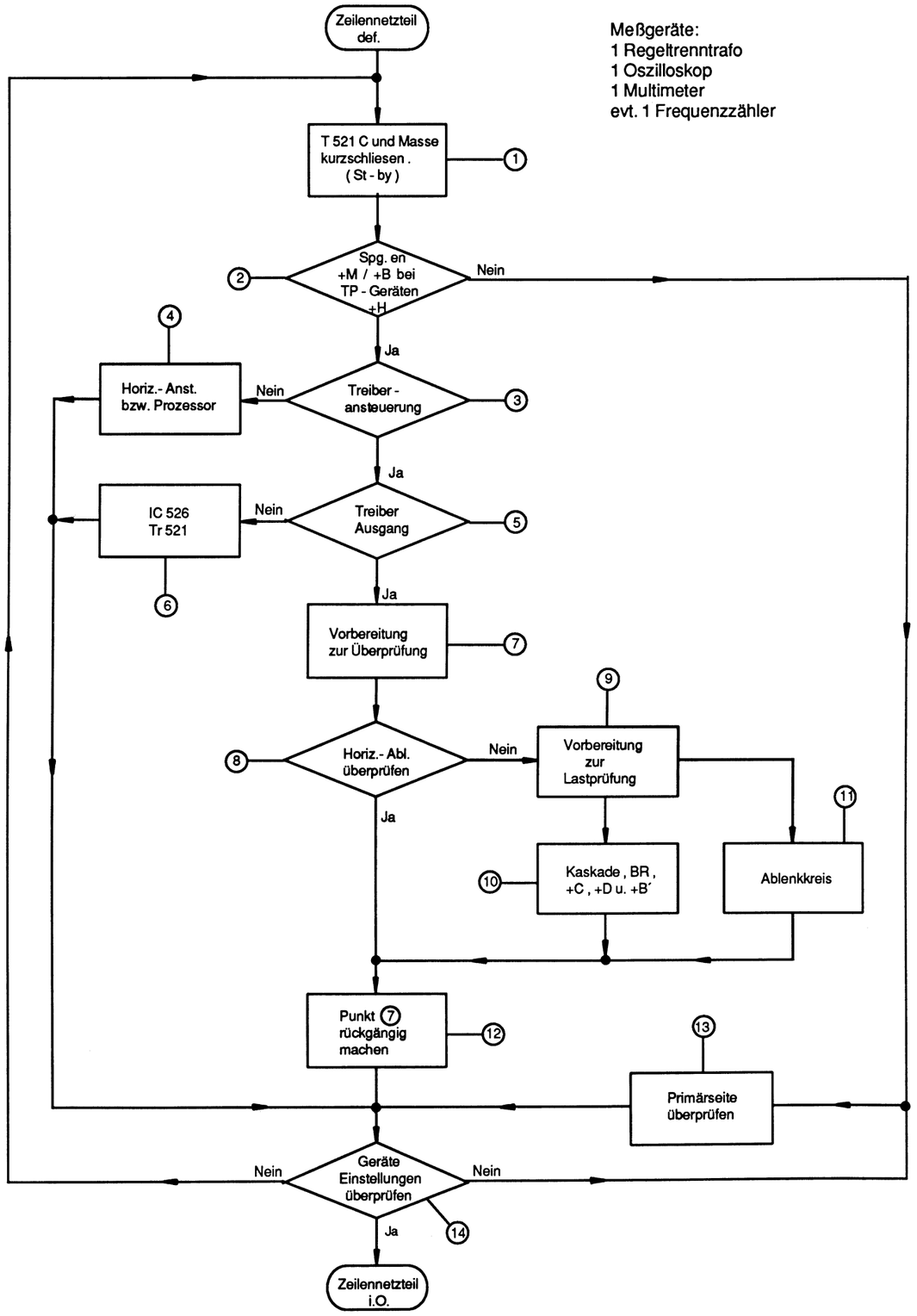
Schutzschaltungen des TDA 3640.

Es erfolgt sofortige Abschaltung bei:
- zu kleiner Betriebsspannung an Pin (≤7 V)
- zu großem I_{CE} des T 521 (negativer als −1 V an Pin 7)
- Netzüberspannung (Spannung an Pin 18 um 2,8 V größer als an Pin 2)
- Netzunterspannung (Spannung an Pin 18 um 1,4 V< als an Pin 2)
- zu großer Hochspannung (Zeilenrückschlagimpulse ≥6 V an Pin 12)
- überhöhter Kristalltemperatur (>135°C).

Schutzschaltungen des TDA 8140.

Es erfolgt sofortige Abschaltung bei:
- zu geringer Betriebsspannung an Pin 2 (< 7 V)
- Störimpulsen (falsche Steuerimpulse) während des Zeilenrücklaufes
- überhöhter Kristalltemperatur (> 160°).

Tips zur Fehlersuche



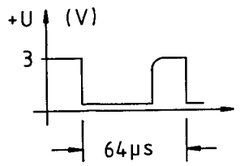
Meßgeräte:
1 Regeltrenntrafo
1 Oszilloskop
1 Multimeter
evt. 1 Frequenzzähler

Erklärung zu den einzelnen Schritten im Flußdiagramm:

① Netzstecker ziehen
H - Ablenktransistor T 521 Kollektor mit Masse verbinden (Stand by)

② Gerät einschalten
Sekund. Spannung messen: +M 10-12,5 V ($I_{max.}$ 350 mA)
+B 9-11 V
+H 5 V (nur bei Fernbed.)

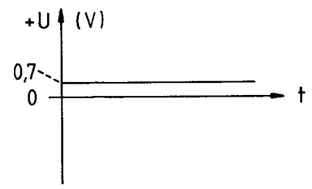
③ TDA 8140 Oszillogramm Pin 7 15625 Hz



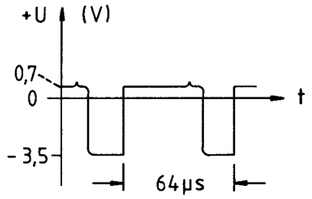
Spannung Pin 2 8-12 V
Spannung Pin 6 >2,5 V = Normalbetrieb
Spannung Pin 6 0 V = Stand by (Fernbed.)

④ Ablenk-Baustein bzw. ZF/Synch.-Baustein:
Hor, Ausgang testen
Bedienteil - Prozessor: Stand by - Ausgang überprüfen.

⑤ Basis T 521 Oszillogramm:
bei IC 525 Pin 6: 0 V



bei IC 526 Pin 6: >2,5 V



⑥ TDA 8140 mit Außenbeschaltung und T 521 überprüfen.

⑦ Vorbereitung zur Überprüfung der Horizontal-Endstufe
– Netzstecker ziehen, Si 624 entfernen
– Anschluß Ⓐ am Zeilennetztrafo TR 665 auftrennen
– an TR 665 Anschluß Ⓜ eine Gleichspannung von ca. 130 V (ca. 450 mA) einspeisen.
Hierzu kann auch das eigene Netzteil verwendet werden: Elko C 626 Masse und Plus mit Sekundär-Masse und TR 665 Anschluß Ⓜ verbinden. Regeltrafo auf 100 V~ stellen. Gerät einschalten.

⑧ Kurzzeitig 15-20 V Gleichspannung über Diode an + M einspeisen. Gerät über Fernbed. einschalten (bei richtiger + C erscheint zu großes Bild).
Wenn das eigene Netzteil verwendet wird, ist ein starker Netzbrumm sichtbar.
Achtung! Das Gerät jetzt nicht mehr mit Fernbed. auf Stand by schalten, sondern Betriebsspannung abschalten!

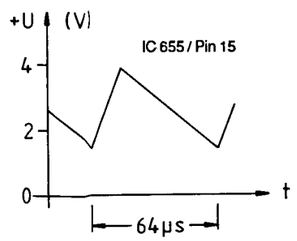
⑨ Vorbereitung zur Lastprüfung
Netzstecker ziehen, eventuell angelegte externe Hochvoltspannung (120 V) an TR 665/Anschluß Ⓜ abschalten.

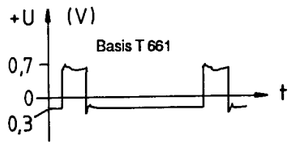
⑩ Kaskade U~ ablöten (Test: Kaskade und Bildröhre)
Last an Sekundär-Spannungsquellen prüfen:
Ohmmessung zwischen Masse und den Punkten +C, +D, +B, +B', +M, +H.
Der gemessene Widerstandswert muß bei richtiger Polung (Gleichrichterdiode in Sperrichtung) größer als 4 kΩ sein.

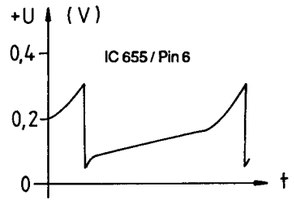
⑪ Tr 521 und Ablenkkreis (Horiz. Joch 1,5-3,5Ω) prüfen

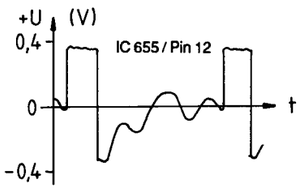
⑫ Alle Punkte unter rückgängig machen

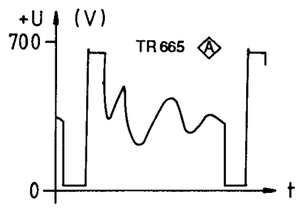
⑬ TR 665 Spannung Pkt. Ⓔ ca. 300 V
TDA 3640 Spannung Pin 18 ca. 13 V, Spannung Pin 17 ca. 6 V
Pin 2 ca. 10,5 V, Spannung Pin 16 ca. 3 V





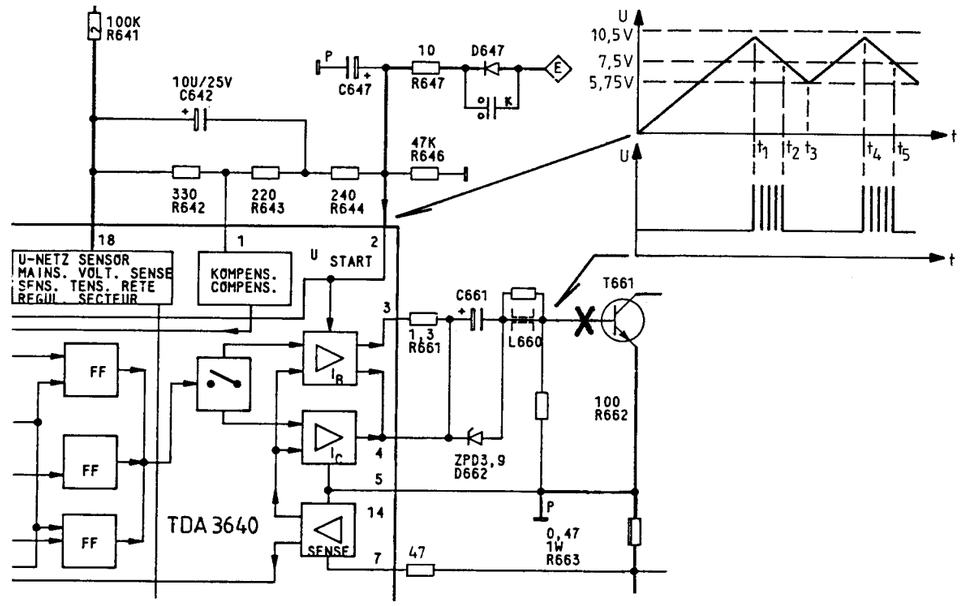






Mögliche Fehlerursachen: Si 624, T. 661, D 666, R 647, TDA 3640. Kurzschluß T 521 entfernen.

Einfacher Test für den Anschwing-Ablauf
Der Anschwing-Ablauf kann ohne Netzschalttransistor T 661 geprüft werden.
Hierzu den Basis-Anschluß T 661 von der übrigen Schaltung trennen:



Oszilloskop anschließen (Pin 2/C 661). Gerät einschalten.
An IC/Pin 2 steigt die Anlaufspannung bis knapp unter die Regelgröße 10 V an (Zeitpunkt t_1), Stromaufnahme ca. 100 µA.

Zeitpunkt t_1: IC 655 schwingt an (Stromaufnahme 15-20 mA) und gibt über Pin 3 etwa zeilenfrequente Steuerimpulse ab (ca. 1,5 V_{ss}). Der Spannungsteiler R 642, R 643 und R 644 ist für den IC-Betrieb (20 mA) zu hochohmig. Über D 647 wird keine Betriebsspannung gewonnen. An Pin 2 sinkt die Spannung wieder ab.

Zeitpunkt t_2: Bei U_B 7,0 V schaltet IC 655 die Basis-Ansteuerung ab. U_B sinkt weiter.

Zeitpunkt t_3: Bei U_B 5,75 V schaltet IC 655 ab, Stromaufnahme nur noch ca. 100µA. U_B steigt wieder an und im Zeitpunkt t_4 beginnt der Zyklus erneut.

Am IC/Pin 15 ist das ständige Anschwingen und Abschalten durch Impulspakete erkennbar.

⑭ +C Spannung nach Schaltbild kontrollieren, ggf. an R 637 nachstellen, Netzregelung mit Regeltrafo testen (±10%).

Service am I²C-Bus (mit SIEMENS-Prozessor).
Bei Fehlfunktionen des Gerätes, die nicht auf Netzteil, Hochspannung und Ablenkung zurückzuführen sind, ist der I²C-Bus gemäß Tabelle 1 zu prüfen, bevor weitere Servicearbeiten nach Tabelle 2 durchgeführt werden.
Der µComputer in der Bedieneinheit IC 850 liefert Steuerbefehle für Tuner, ZF-Verstärker Videotext und IC 350 über den I²C Bus.
Hinweis:
Bei Modulwechsel ist das Gerät generell auszuschalten!
Auch in Stellung »Bereitschaft« darf kein Modul gezogen werden! MOS-handling beachten.

Tabelle 1

Messung	Meßwert	Meßpunkt	Mögliche Fehler
+ H	5 V	Pin 40, IC 850	D 682, IC 686, IC 850
12 MHz Takt Reset	12 MHz, 3 V_{ss} 4 V_{ss} nur im Einschaltmoment	Pin 19, IC 850 Pin 9	F 808, IC 850 C 811
I²C Bus	5 V_{ss}	Pin 21, 22, IC 850	Die I²C-Bus-Daten sind auch ohne TP-Bedienung oder Keyboardeingabe vorhanden. Bei fehlenden Daten: Die Leitungen SDA und SCL auftrennen. Sind dann die I²C-Bus-Daten vorhanden, liegt eine Überlastung des I²C-Bus vor. **Fehlerursache:** Tuner, ZF-Verstärker, Videotext und IC 350

Tabelle 2
Mögliche Fehlerarten des Gesamtgerätes

Fehler	Mögliche Ursache	Meßwert	Meßpunkt
Keine Frequenzabstimmung	Tuner (Speicher, PLL)	+0,2–30 V	Pin 13, 15
	+ B' + H Ⓜ	+ 12 V + 5 V ca. + 4,5 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Keine Bedienfunktion	+ H, IC 850	+ 5 V	IC 850 Pin 40
LED falsche Anzeige	IC 850		
	F 808	4 MHz, 3 V	IC 850 Pin 19
Kein Ton	Keine Koinzidenzkennung (ZF-Verstärker	>3 V	IC 850 Pin 11
	IC 365/IC 355	+ M/ca. 23 V	IC 365/355 Pin 2
Keine Programmschaltung mit Fernb.	IR-Vorverstärker	IR-Signal 5 V_{ss}	IC 850 Pin 10
Keine Analogwerte für Helligkeit Kontrast Farbkontrast Tint	I²C-Bus, IC 350 D/A-Converter " " "	5 V_{ss} 1-3 V 2-4 V 2-4 V 0,5-11,5 V	IC 350 Pin 4, 5 Farb/RGB Pin 10 Farb/RGB Pin 11 Farb/RGB Pin 12 Farb/RGB Pin 3
Beim Einschalten mit der Netztaste schaltet das Gerät auf Bereitschaft.	T 816	beim Einschalten kurzzeitig »LOW« (Kollektor)	IC 850 Pin 13
Kein FBAS-Signal	Tuner	ca. 10 V	Tuner Pin 3
	ZF-Verstärker	ca. 10 V	ZF-Verst. Pin 10
	+ B'	+ 12 V	ZF-Verst. Pin 17
Gerät geht nicht in den Betriebszustand – akustisches Schwirren.	C 653 Toleranz zu groß oder defekt	① Tastkopf 1:10	IC 655 Pin 15

Short Functional Description

The line/power supply unit has two important features:
– the line/mains transformer (ZNT) with ferrite core. This transformer is provided with windings for the power supply and line output stages;
– the supply frequency corresponds to the line frequency.
The ZNT is used for electrical isolation, horizontal deflection, and generation of the operating voltage. The ZNT windings are tightly and loosely coupled to ensure that the load capacity of the supplies is high enough and that back effects on the line transformer winding N-M are avoided.

Startup Circuit

The starting voltage for IC 655 is obtained from the bridge rectifier D 621 via R 641. If the voltage on pin 2, which is derived from the resistor network R 642, 643, and 644, reaches a level of approximately 10 V, the IC 655 starts to drive T 661 via pin 3 (precondition: pin 18 >10V). The line/power supply circuit starts to oscillate. Simultaneously, the current consumption drawn via pin 2 rises and the winding E-D of the ZNT takes over the operating voltage supply function (D 647, R 647, C 647).

Oscillator in IC TDA 3640

The control pulses for the T 661 are generated by are generated by an oscillator which operates on the threshold principle where C 653 is an externally connected frequency-determining component (oscillator retaining range 14-17 kHz approx.). The oscillator oscillates at a free-running frequency until the reference pulses from the ZNT exceed 1 V_p at pin 12. In full operating condition (ON) a voltage of about +5 V_p is applied to pin 12.

Line Output Stage

The deflection transistor T 521 is activated in stand-by mode. The cyclic line-frequency control of the deflection transistor corresponds to the "ON" operating mode. The power for the horizontal sweep circuit is derived from the elcetromotive force of coil M-N sao that no additional operating voltage is necessary for T 521.

Vooltage Stabilisation

In stand-by mode the pulse from winding E-D (tightly coupled with winding A-B) is used as a reference for stabilisation. The controlled variable is +10.5 V on pin 2 TDA 3640.
In full operating condition, that is "ON", the voltage in the horizontal sweep circuit (transformer winding M-N) must be stabilised to a constant level. This is achieved by means of a reference pulse from winding C-D which is tightly coupled with winding M-N. The resulting direct voltage obtained via D 633 is proportional to the width of the picture or high voltage and is applied to pin 10 and compared with the reference voltage (about 3 V) on pin 11. In this part of the circuit the +C voltage is adjusted by means of R 637 to 196 V and 192 V for 25" receivers and 28" receivers, respectively.

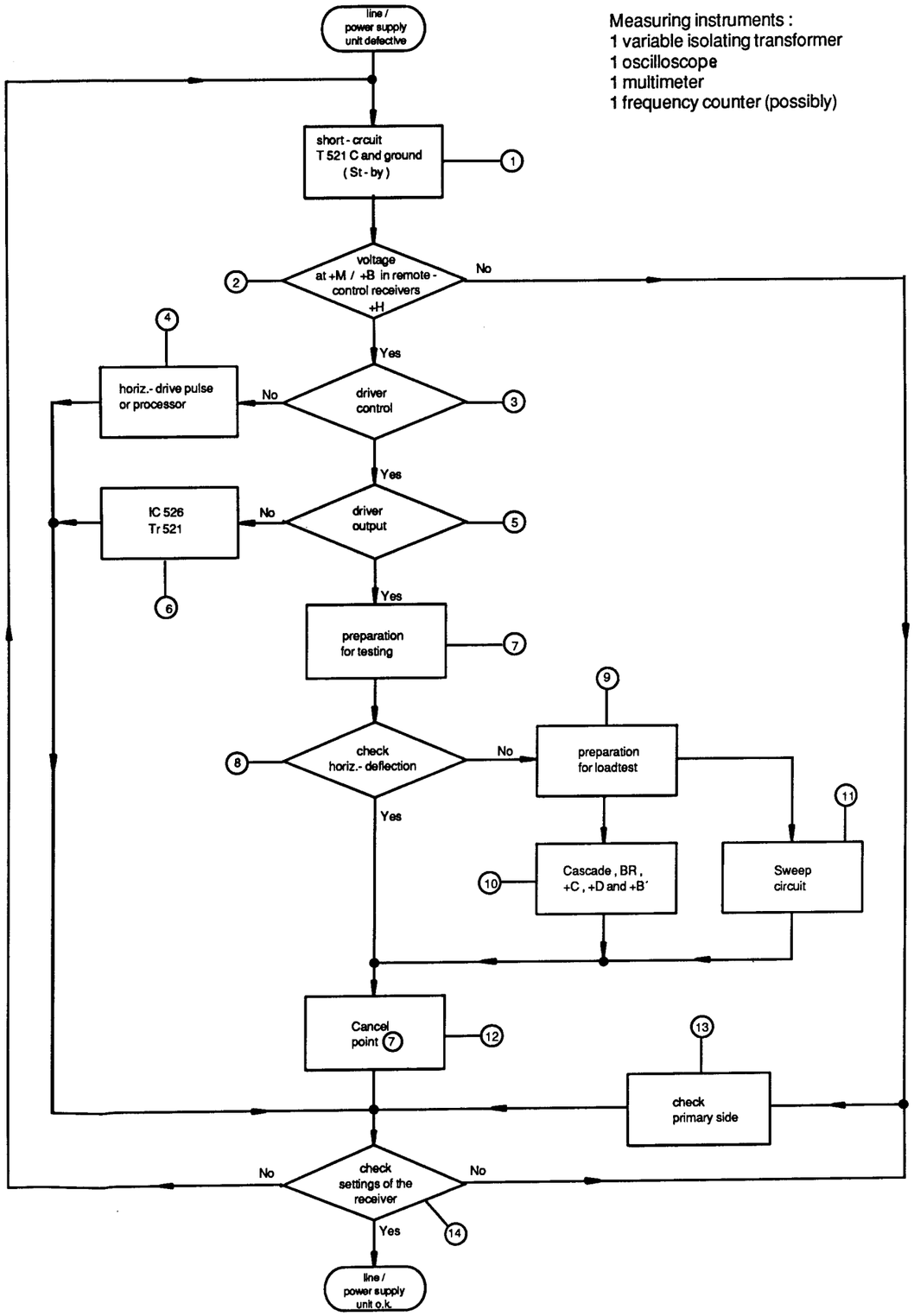
Protective Circuits of TDA 3640

The protective circuits respond immediately if:
– the operating voltage on pin 2 is too low (≤7 V);
– I_{CE} of T 521 is too high (more negative than –1 V at pin 7);
– the power supply voltage is too high (voltage at pin 18 is 2.8 V higher than at pin 2);
– the power supply voltage is too low (voltage at pin 18 is 1.4 V lower than at pin 2);
– the high voltage is excessivley high (line flyback pulses ≥6 V at pin 12);
– the crystal temperature is too high (>135° C).

Protective Circuits of TDA 8140

The protective circuits respond immediately if:
– the operating voltage at pin 2 is too low (<7 V);
– interference pulses (incorrect control pulses) occur during line flyback;
– the crystal temperature is too high (>160° C).

Tips for Falut location



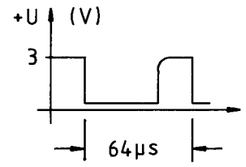
Measuring instruments :
1 variable isolating transformer
1 oscilloscope
1 multimeter
1 frequency counter (possibly)

Explanation of the individual steps in the flow chart:

① Disconnect the mains plug
Connect the horizontal sweep transistor T 521 collector to ground (stand-by)

② Switch on the receiver.
Check the secondary voltages: +M 10-12.5 V (I_{max} 350 mA)
+B 9-11 V
+H 5 V (only RC receivers)

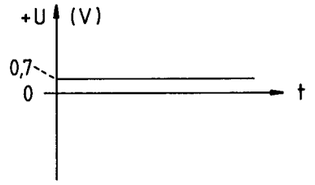
③ TDA 8140 oscillogram pin 7 15625 Hz



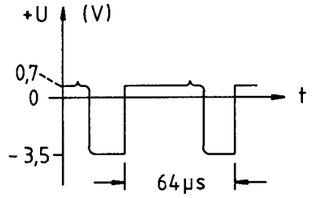
voltage pin 2 8-12 V
voltage pin 6 > 2.5 V = normal operation
voltage pin 6 0 V = stand-by (RC)

④ Deflection module and IF/sync module: check line output Control unit - processor: check stand-by - output

⑤ Oscillogram of base T 521
IC 526 pin 6: 0 V



IC 526 pin 6: > 2.5 V



⑥ Check TDA 8140 with externally connected components and T 521

⑦ Preparations for checking the line output stage
- Disconnect the mains plug; remove Si 624
- Open connection Ⓐ of the line/mains transformer TR 665
- Remove the short circuit from T 521
- Apply a voltage of approx. 130 V (about 450 mA) to connection Ⓜ of TR 665.
  It is also possible to use the receiver's own power supply. For this purpose, connect the ground connection of the C 626 electrolytic capacitor and the positive pole to the secondary ground connection and Ⓜ of TR 665. Set the variable-voltage transformer to 100 V a.c.. Switch on the receiver.

⑧ Apply a 15-20 V direct voltage for a short time to +M via an external diode. Switch on the receiver by means of the remote control (the picture is too large if +C is correct).
When using the built-in power supply an intensive mains hum will be visible.
Attention! Do not use the remote control to switch the receiver to stand-By but switch off the operating voltage!

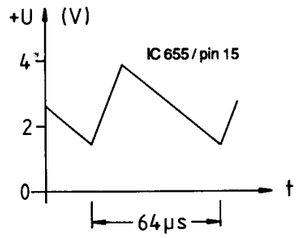
⑨ Preparations for load test
Disconnect the mains plug and switch off the external high voltage (120 V) possibly connected to TR 665/contact Ⓥ.

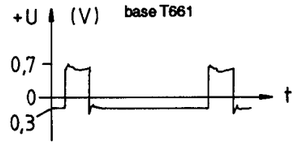
⑩ Unsolder cascade U a.c. (cascade and picture tube test)
Check the load at the secondary voltage sources:
Ohmic resistance between ground and points +C, +D, +B, +B', +M, +H. If the polarity is correct (rectifier diode in high-resistance direction) the measured resistance must be higher than 4 kOhm.

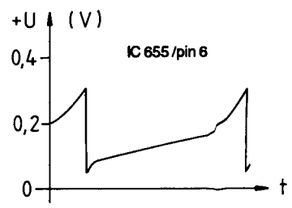
⑪ Check T 521 and sweep circuit (horizontal deflection yoke 1.5-3.5 Ohm)

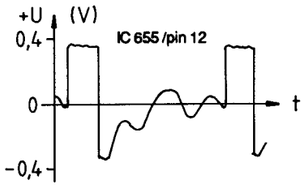
⑫ Cancel all preparatory measures under ⑦.

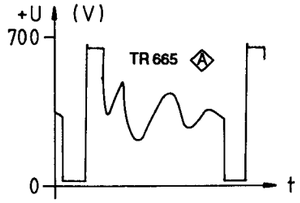
⑬ TR 665 voltage point Ⓑ 300 V approx.
TDA 3640 voltage pin 18 13 V approx., voltage pin 17 6 V approx.
voltage pin 2 10.5 V approx., voltage pin 16 3 V approx.







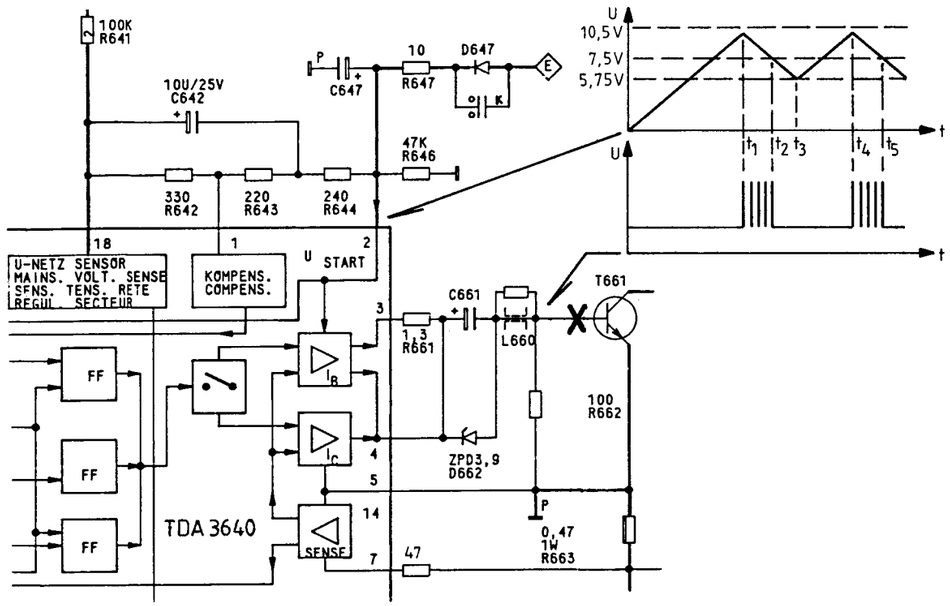




Possible causes of trouble: Si 624, T 661, D 666, R 647, TDA 3640.
Remove short circuit at T 521.

Simplified Test for the Startup Sequence

The startup sequence can be checked without the mains switching transistor T 661.
For this purpose, disconnect the base of T 661 from the circuit:



Connect an oscilloscope to pin 2/C 661. Switch on the receiver. On pin 2 of the IC the starting voltage must rise to just below the controlled variable of 10 V (time t_1); current consumption approx. 100µA.

Time t_1: IC 655 starts to oscillate (current consumption 15-20 mA) and supplies via pin 3 conrol pulses at approx. line frequency (1.5 V_{pp}). The voltage divider R 642, R 643, and R 644, is at too high a resistance to provide sufficient current for the IC to be in operation (20 mA required). There is no operating voltage obtained via D 647. The voltage at pin 2 decreases.

Time t_2: When the voltage U_B reaches 7.0 V the IC 655 stops driving the base. U_B continues to decrease.

Time t_3: When the voltage U_B reaches 5.75 V the IC 655 switches off; the current consumption is now only 100µA approximately. U_B rises and the cycle starts again at t_4.

On pin 15 of the IC the cyclic oscullation and switching off process can be identified by the packets of pulses.

⑭ Check the voltage +C according to the circuit diagram and readjust it with R 637, if necessary; check the power supply voltage regulation with the variable-voltage transformer (±10%).

Service checks on the I^2C bus (with SIEMENS processor)

If faluts occur in the set which cannot be attributed to the power supply unit, the EHT or the deflection system, the I^2C bus should be checked using Table 1 before further service work is carried out using Table 2.
Via the I^2C bus the microcomputer in the control unit IC 850 supplies control signals for the tuner, IF, videotext (teletext) and IC 350.
Note:
When a module is being changed, the set should be switched off completely. Modules must not be unplugged even in the »standby« mode! Observe MOS handling precautions.

Tabelle 1

Test	Test Figures	Test Point	Possible faults
+ H	5 V	Pin 40, IC 850	D 682, IC 686, IC 850
12 MHz clock Reset	12 MHz, 3 V_{pp} 4 V_{pp} only at moment of switch on	Pin 19, IC 850 Pin 9	F 808, IC 850 C 811
I^2C bus	5 V_{pp}	Pin 21, 22, IC 850	The I^2C bus data are present even without input from the remote control or keyboard. If data are absent disconnect the SDA and SCL lines. If data are then present on the I^2C bus, the I^2C bus is overloaded. Possible faults: Tuner, IF, Videotext (Teletext) and IC 350.

Tabelle 2

Possible faults which can occur in any part of the set

Fault	Possible Cause	Test Figure	Test Point
No frequency tuning	Tuner (memory, PLL)	+ 0,2–30 V	Pin 13, 15
	+ B' + H Ⓜ	+ 12 V + 5 V ca. + 4,5 V	Tuner pin 16 Tuner pin 2 Tuner pin 1
No functions appecpted	+ H, IC 850	+ 5 V	IC 850 pin 40
Incorrect LED indication	IC 850		
	F 808	4 MHz, 3 V	IC 850 pin 19
No sound	No coincidence identification (IF)	>3 V	IC 850 pin 11
	IC 365/IC 355	+ M/about 23 V	IC 365/IC 355 pin 2
Programme cannot be change with remote control	IR-preamplifier	IR-signal 5 V_{pp}	IC 850 pin 10
No analog signals for Brightness Contrast Colour contrast Tint	I^2C, IC 350 D/A-Converter " " "	5 V_{pp} 1-3 V 2-4 V 2-4 V 0,5-11,5 V	IC 350 Pin 4, 5 Colour/RGB, pin 10 Colour/RGB, pin 11 Colour/RGB, pin 12 Colour/RGB, pin 3
Set switches to standby mode on operation of power button	T 816	Short-time "LOW" on switch-on (collector)	IC 850, pin 13
No CCVS	Tuner	approx. 10 V	Tuner, pin 3
	IF	approx. 10 V	IF, pin 10
	+ B'	+ 12 V	IF, pin 17
Receiver does not go to working order – audible whistle	C 653 Tolerance too large or capacitor defective	① Probe 1:10	IC 655 Pin 15 IC 655 Pin 15

Prospetto delle funzioni

L'alimentatore con stadio finale orizzontale ha due caratteristiche importanti:
- il trasformatore di riga (ZNT) con nucleo in ferrite. Questo trasformatore è provvisto di avvolgimenti per alimentatore e stadio finale di riga
- la frequenza dell'alimentatore corrisponde alla frequenza di riga.

Il trasformatore serve per la separazione galvanica, la deflessione di riga e la produzione della tensione d'alimentazione. Mediante accoppiamento stretto e lasco degli avvolgimenti del trasformatore si ottiene che le tensioni d'alimentazione sono sufficentemente caricabili e non risultano effetti reattivi sull'avvolgimento N-M della sezione di riga del trasformatore.

Il circuito di spunto

La tensione di spunto giunge all'integrato IC 655 dal raddrizzatore a ponte D 621 attraverso R 641. Appena con le resistenze R 642, 643 e 644 si ottengono ca. 10 V al pin 2, l'integrato IC 655 comanda T 661 mediante pin 3 (condizione: al pin 18 deve esserci una tensione >10 V). L'alimentatore di riga entra in regime. Contemporaneamente aumenta l'assorbimento di corrente attraverso il pin 2 e l'avvolgimento E/D del trasformatore provvede ad ottenere l'ulteriore tensione di regime (D 647, R 647, C 647).

L'oscillatore in IC TDA 3640

Gli impulsi di comando per T 661 sono generati da un oscillatore che lavora secondo il principio di soglia. C 653 è per questo l'unico elemento che determina la frequenza, collegato esternamente (campo di sincronismo dell'oscillatore compreso tra ca. 14-17 kHz). L'oscillatore rimane in regime libero finchè gli impulsi di riferimento del trasformatore al pin 12 sono maggiori di +1 V_p. Con apparecchio in regime al pin 12 si trovano ca. +5 V_p.

Lo stadio finale di riga

In funzionamento stand-by il transistor di deflessione T 521 è conduttivo. Il comando periodico a ritmo di riga del transistor di deflessione corrisponde alla condizione di regime «EIN» (acceso). L'energia per il circuito di deflessione viene ricavata dalla FEM della bobina M-N. In tal modo T 521 non necessita di nessun altra tensione d'alimentazione.

La stabilizzazione della tensione

In stand-by l'impulso dell'avvolgimento E-D (accoppiamento stretto con l'avvolgimento A-B) viene utilizzato come riferimento per la stabilizzazione. Al pin 2 di IC TDA 3640 la grandezza di regolazione è +10,5 V.
Con apparecchio acceso la tensione nel circuito di deflessione orizzontale (avvolgimento M-N del trasformatore) deve rimanere stabile. Ciò avviene mediante l'impulso di riferimento dell'avvolgimento C-D che è accoppiato strettamente con l'avvolgimento M-N. La tensione continua ottenuta con D 633 è proporzionale alla larghezza di quandro risp.te all'EAT e sul pin 10 viene confrontata con la tensione di riferimento presente al pin 11 (ca. 3 V). In questa situazione la tensione +C viene regolata con R 637 al valore di 196 V per apparecchi da 25" e al valore di 192 V per apparecchi da 28".

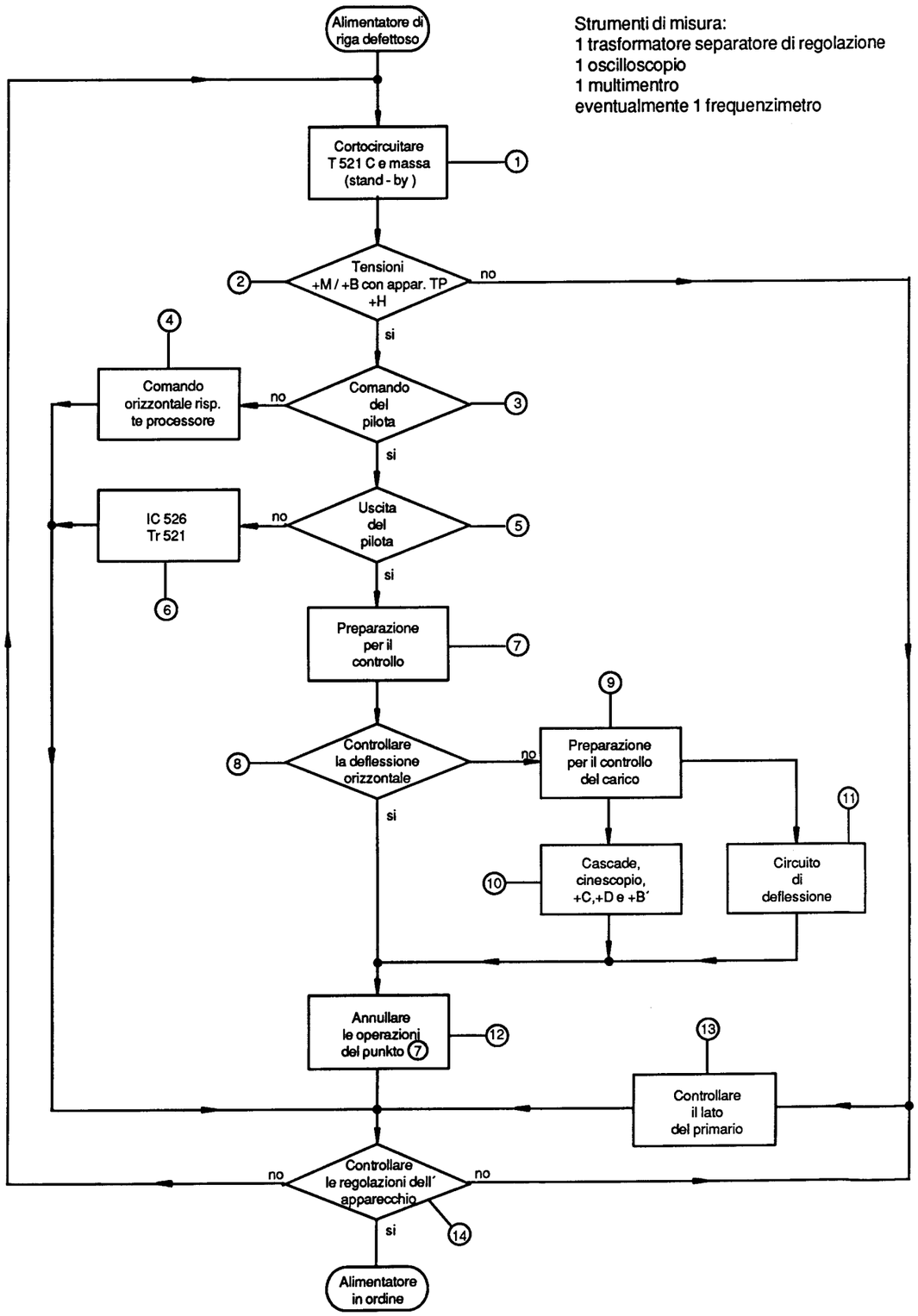
Circuiti di protezione del TDA 3640

Essi provocano un immediato spegnimento:
- quando al pin 2 la tensione di regime è troppo bassa (≤7 V)
- quando esiste eccessiva I_{CE} in T 521 (più negativa di −1 V al pin 7)
- in presenza di sovratensioni di rete (tensione al pin 18 superiore di 2,8 V rispetto al pin 2)
- in presenza di sottotensioni di rete (tensione al pin 18 inferiore di 1,4 V rispetto al pin 2)
- quando la EAT è eccessiva (impulsi di ritorno di riga ≥6 V al pin 12)
- con eccessiva temperatura del cristallo (>135° C).

Circuit di protezione del TDA 8140

Essi provocano un immediato spegnimento:
- quando al pin 2 la tensione di regime è troppo bassa (<7 V)
- in presenza di impulsi di disturbo (impulsi di comando errati) durante il ritorno di riga
- con eccessiva temperatura del cristallo (>160°C).

Suggerinenti per la ricerca guasti



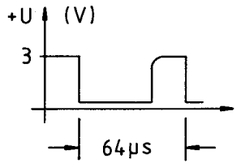
Strumenti di misura:
1 trasformatore separatore di regolazione
1 oscilloscopio
1 multimentro
eventualmente 1 frequenzimetro

Spiegazione dei singoli passaggi del diagramma di ricerca:

① Disinserire la spina di rete.
Collegare a massa il collettore del transistor di deflessione orizzontale T 521 (stand-by).

② Accendere l'apparecchio
Misurare la tensione secondaria: +M 10-12,5 V (I_{max} 350 mA)
+B 9-11 V
+H 5 V (solo app. con TP)

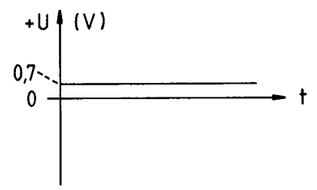
③ TDA 8140 Oscillogramma Pin 7 15625 Hz



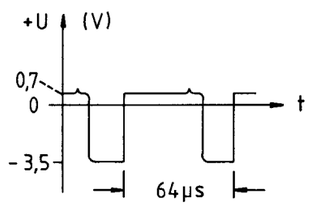
Tensione Pin 2 8-12 V
Tensione Pin 6 > 2,5 V = funz. normale
Tensione Pin 6 0 V = stand-by (TP)

④ Modulo di deflessione risp.te modulo FI/sincronismo: controllare l'uscita orizzontale.
Modulo di comando - processore: controllare l'uscita stand-by.

⑤ Oscillogramma alla base T 521:
con 0 V al pin 6 di IC 526



con tensione >2,5 V al pin 6 di IC 526



⑥ Controllare TDA 8140 con cablaggio periferico e T 521.

⑦ Preparazione per il controllo dello stadio finale orizzontale
– Disinserire la spina di rete, togliere Si 624.
– Staccare il collegamento Ⓐ sul trasformatore TR 665.
– Allontanare il cortocircuito a TR 521.
– Applicare al collegamento Ⓜ di TR 665 una tensione continua di ca. 130 V (ca. 450 mA).
Per questo può impiegato anche l'alimentatore proprio: collegare la massa di C 626 alla massa secondaria e il + al collegamento Ⓜ del trasformatore TR 665. Portare il regolatore separatore su 100 V~. Accendere l'apparecchio.

⑧ Applicare brevemente 15-20 V continui mediante il diodo a +M. Accendere l'apparecchio con TP (con +C corretta, appare un'immagine troppo grande).
Quando viene impiegato l'alimentatore proprio, è visibile un forte ronzio di rete.
Attenzione! Ora non commutare l'apparecchio su stand-by con telecomando, bensì togliere la tensione d'alimentazione!

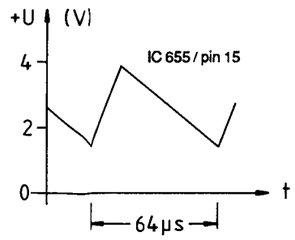
⑨ Preparazione per il controllo del carico
Disinserire la spina di rete, togliere la tensione di alimentazione esterna (120 V) eventualmente collegata a TR 665/collegamento Ⓜ.

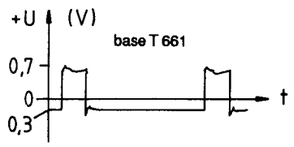
⑩ Dissaldare il cascade U~ (controllo del cascade e del cinescopio).
Controllare il carico alle sorgenti di tensione secondarie:
Misura ohmica tra massa e i punti +C, +D, +B, +B', +M, +H. Il valore ohmico misurato, con esatta polarità (diodo raddrizzatore con polarizzazione inversa) deve essere superiore a 4 kOhm.

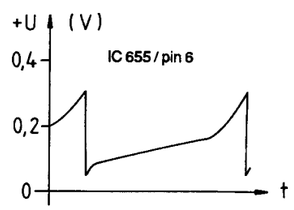
⑪ Controllare Tr 521 e il circuito di deflessione (giogo orizzontale 1,5-3,5 Ohm).

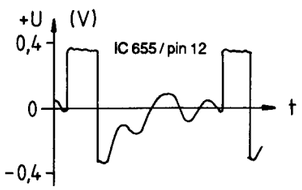
⑫ Annullare tutte le operazioni descritte al punto 7.

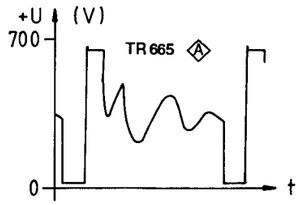
⑬ TR 665 tensione punto Ⓑ ca. 300 V
TDA 3640 tensione pin 18 ca. 13 V, tensione pin 17 ca. 6 V
tensione pin 2 ca. 10,5 V, tesnione pin 16 ca. 3 V





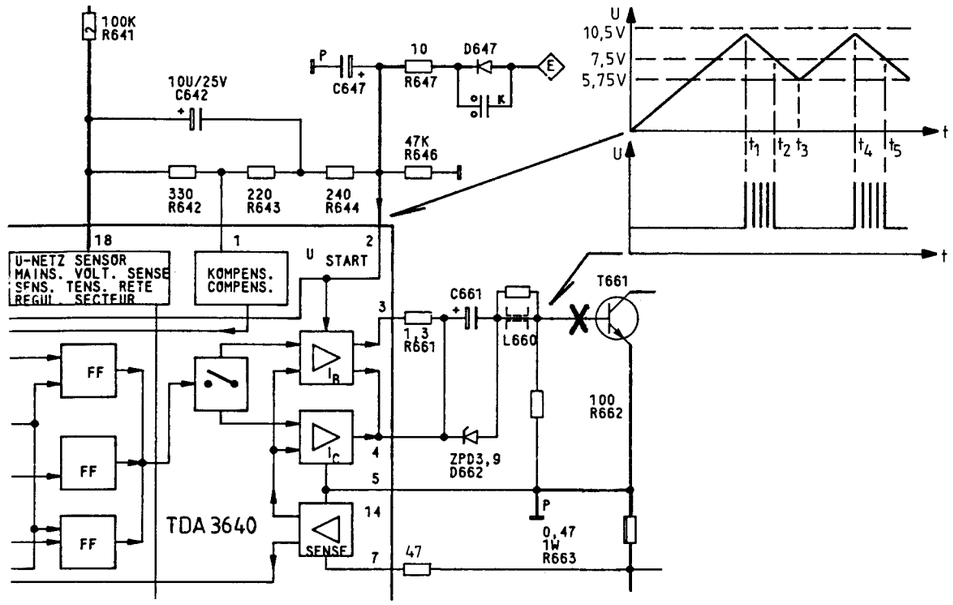






Possibili cause del guasto: Si 624, Tr 661, Di 666, R 647, TDA 3640.
Togliere il cortocircuito a Tr 521.

Semplice verifica dell'avviamento processo oscillatorio):
Questo può venir controllato senza il transistor T 661.
Interrompere quindi il collegamento della base di T 661 dal resto del circuito:



Collegare l'oscilloscopio (pin 2/C 661). Accendere l'apparecchio. Al pin 2 dell'integrato la tensione di spunto cresce appena al di sotto della grandezza di regolazione di 10 V (istante t_1), assorbimento di corrente ca. 100 µA.

Istante t_1: IC 655 oscilla (assorbimento 15-20 mA) e attraverso pin 3 invia impulsi di comando circa alla frequenza di riga (ca. 1,5 V_{pp}).
Il partitore di tensione R 642, R 6432 e R 644 ha un valore ohmico troppo elevato per il funzionamento dell'integrato (20 mA).
Mediante D 647 non viene ricavata nessuna tensione di alimentazione. Al pin 2 la tensione diminuisce nuovamente.

Istante t_2: Con U_B 7,0 V, IC 655 disattiva il circuito di comando della basse. U_B scende ulteriormente.

Istante t_3: Con U_B 5,75 V, IC 655 è disattivato, l'assorbimento è ancora ca. 100 µA. U_B sale nuovamente e all'istante t_4 il ciclo si ripete.

Al pin 15 dell'integrato è riconoscibile il continuo attivarsi e disattivarsi mediante pacchetti di impulsi.

⑭ Controllare la tensione +C secondo lo schema, eventualmente correggerla con R 637, controllare la regolazione della tensione di rete con il regolatore separatore (±10%).

Service per I²C-Bus (con processore SIEMENS)

Se l'apparecchio funziona erroneamente e ció non dipende nè dall'alimentatore, nè dall'alta tensione o dalla deflessione, occorre controllare il bus I²C secondo la tabella ; prima di effettuare altri lavori di assistenza come da tabella 2.
Il microcomputer nell'unitá di comando IC 850 fornisce le istruzioni per tuner, FI, televideo e IC 350 attraverso il bus I²C.

Nota:
Spegnere l'apparecchio durante la sostituzione di un modulo! Non togliere il modulo memmeno con apparecchio in posizione d'attesa! Fare attenzione alle norme MOS.

Tabella 1

Misura	Valore di misura	Punto di misura	Possibili guasti
+ H	5 V	Pin 40, IC 850	D 682, IC 686, IC 850
Cadenza 12 MHz Reset	12 MHz, 3 V_{pp} 4 V_{pp} solo all'atto dell'accensione	Pin 19, IC 850 Pin 9	F 808, IC 850 C 811
Bus I²C	5 V_{pp}	Pin 21, 22, IC 850	I dati nel bus I²C sono presenti anche senza comando da TP o immissione tramite tastiera. Se i dati mancano: interrompere le linee SDA e SCL. Se ora i dati sono presenti, nel bus I²C c'è un sovraccarico. **Possibili cause del guasto:** tuner, FI, televideo, e IC 350.

Tabelle 2

Possibili guasti nell'apparecchio

Guasto	Possibile causa	Valore de misura	Punto di misura
Non é possibile sintonizzare la frequenza	Tuner (memoria, PLL)	+0,2–30 V	Pin 13, 15
	+ B' + H Ⓜ	+ 12 V + 5 V ca. + 4,5 V	Tuner Pin 16 Tuner Pin 2 Tuner Pin 1
Nessuna funzione viene accettata	+ H, IC 850	+ 5 V	IC 850 Pin 40
Indicazione LED errata	IC 850		
	F 808	4 MHz, 3 V	IC 850 Pin 19
Manca l'audio	Nessun riconoscimento di coincienza (FI)	>3 V	IC 850 Pin 11
	IC 365/IC 355	+ M/ca. 23 V	IC 365/355 Pin 2
Non viene commutato il programma con TP	Preamplif. IR	Segnale IR 5 V_{pp}	IC 850 Pin 10
Manca il valore analogico per luminosità contrasto contrasto colore tinta	Bus I²C, IC 350 convertitore D/A " " "	5 V_{pp} 1-3 V 2-4 V 2-4 V 0,5-11,5 V	IC 350 Pin 4, 5 Colore/RGB Pin 10 Colore/RGB Pin 11 Colore/RGB Pin 12 Colore/RGB Pin 3
Accendendo con tasto rete l'apparecchio commuta in posizione d'attesa	T 816	All'atto dell'accensione brevemente «LOW» (collettore).	IC 850 Pin 13
Nessun segnale FBAS	Tuner	ca. 10 V	Tuner Pin 3
	IF	ca. 10 V	FI Pin 10
	+ B'	+ 12 V	FI Pin 17
L'apparecchio non va in posizione di funzionamento (ronzio)	C 653, tolleranza troppo grande e difettoso	①, sonda dell' oscillografo 1:10	IC 655 Pin 15